

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL 83, No 7

CHICAGO, ILLINOIS

AUGUST 16, 1924

PREVENTIVE MEDICINE AND THE FUTURE OF MEDICAL PRACTICE*

HENRY F. HEIMHOLZ, MD
ROCHESTER, MINN.

In no sphere of medicine does prevention play so large a part as in pediatrics, and in no other branch of medicine has the growth of a specialty been so intimately associated with a corresponding development of preventive measures, emphasis being placed on the prevention of disease rather than on its cure. I doubt whether any specialized field has ever grown more rapidly than pediatrics in the last fifteen years, and this at a time when preventive measures, so-called public health work, were being carried on very much more actively and extensively than ever before. One might almost say that the demand for the pediatrician was created by the campaign of education in health matters of childhood. At that time, the greatest field of preventive medicine, the first year of life, was almost entirely neglected. The general practitioner was content to leave the care and feeding of the infant to the nurse, to the mother, or to the directions on the bottle or carton, he concerned himself with the infant only when it became ill. The high death rate among infants was considered a weeding out of the unfit, and only when national fervor stirred the profession did we begin to take an interest in the normal child.

Since 1892, when Budin first inaugurated his conferences for mothers, we have traveled far along the road to child health, and it can be said to our credit that a large part of the work has been done by pediatricians. Many of us have spent no small part of our time in developing prevention programs that, in the minds of some, represent almost treason to the medical profession. It is said that we are undermining the profession, that the physician will be out of a job, and that there will be no more sick to treat. Such statements have been so frequently made that it seems essential to analyze them more closely. We, as pediatricians, are even more concerned than is the general practitioner, because our work is in large measure already preventive medicine and is becoming more so each year. For example, in years gone by, during the summer months, the pediatrician was busy taking care of patients with cholera infantum or lesser gastro-intestinal disturbances, now it is the exception to see acute cholera infantum, even in hospital practice. The intelligent mother, at the first sign of trouble, cuts down on the baby's food, gives

only water, and later probably telephones her physician to find out how soon she can increase the child's food.

Has this worked to the disadvantage of the pediatrician after all? Is he not taking care of practically all the babies of his clientele in a preventive way? His duties have changed from curing the sick infant to keeping his little charge well. The slogan of infant welfare organizations, "Keep the well baby well," illustrates admirably this change of work. The campaign of education has carried us much beyond this point, however. The average mother begins to ask that her baby be given cod liver oil, in order that it may not develop rickets. She gives her baby orange juice at 3 or 4 months of age, even without a physician's order, because she knows that it will prevent scurvy. Scurvy has become so rare a disease in infancy that in some places it is difficult to find a case to demonstrate to students. With the widespread use of cod liver oil and sunshine, rickets, too, can be practically eradicated. The very cornerstone of pediatric practice, infant feeding, is apparently doomed to a very considerable shrinkage, because by publicity, by collective and individual effort, we have convinced every mother that to nurse her baby is to take out health insurance. Moreover, artificial feeding has been so simplified and made so safe that not only are many disturbances prevented, but it becomes simply a matter of gradually increasing the amount of a single food mixture during the first half year of life, formerly an extremely difficult period to handle.

Vaccination against smallpox was in vogue so long before we started practicing that it has not occurred to us how it was cutting down our practice. Preventive inoculation with toxin-antitoxin mixtures against diphtheria will, I hope, eradicate diphtheria from our practice. Moreover, the recent work in scarlet fever by the Dicks makes it seem more hopeful that this disease, too, may be prevented. Measles can be prevented temporarily by the use of Degwitz convalescent serum. Typhoid has been almost eradicated from most of our communities by controlling the water and milk supplies. The prevention of tuberculosis is in large measure a pediatrician's duty. Tuberculosis, once supposed to be uniformly fatal in childhood, is now known to be fatal only to those who have received an overwhelming infection, or whose general resistance is greatly reduced. We know that most children who become infected show no clinical signs or symptoms of the infection, and only by a skin test is it discovered that they have passed successfully through a tuberculous infection and have immunized themselves against it. The campaign for the pasteurization of all milk consumed by infants and children has practically eradicated the bovine type of infection. The public health measures of hygiene and periodic examinations have

* From the Section on Pediatrics, Mayo Clinic.
* Chairman's address read before the Section on Diseases of Children at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

done much to reduce the incidence of active tuberculosis. Shall we be able to prevent diseases such as rheumatic fever, endocarditis, chorea, and acute nephritis by the timely removal of tonsils and other foci of infection?

Public health work has given the public an entirely new idea of the possibilities of child health and has brought about a demand for care of the child such as we have never had. The parents bring the child to the physician, not because he is sick, but because they want to know what more they can do to make him well in mind and body.

As pediatricians, we have seen our duty in the preventive field of the first two years of life. We have been following our infants carefully through their first two years, we have prevented feeding disturbances, rickets and scurvy, and possibly some of us have seen to it that all the infants under our care have been vaccinated against smallpox and diphtheria. But what have we done after the second year? We have turned our wards loose, to return to us only when sickness arose.

In conversation with numerous pediatricians from all parts of the country, I have found scarcely any who have a definite schedule worked out for regular examinations after the second year, or a regular program of general hygienic measures. The period from 2 to 6 years is, in a measure, just as neglected a time for the child of well-to-do parents as it has been for the child of the poor. We dismiss the healthy child from our preventive care at the end of the second year, and he enters school at 6 years of age, with numerous remediable defects, infected tonsils, decayed teeth, flatfoot, poor posture, and behavior disturbances which in many instances might have been prevented or corrected before he entered school. Even in the school period, the average school examination is not thorough enough to locate any but the most glaring defects. Every child is entitled to a complete physical examination, including an analysis of blood and urine, twice during its third year and once each year thereafter. This schedule is something that we should impress on the parents at the first visit when we see their infants, so that they will conceive of prevention not as something that concerns only the infancy of their charge, but as a thing of importance to the end of childhood, or better, throughout life. If this prevention program is preached from the beginning, I do not believe that we shall have any more difficulty in carrying it out in its entirety than we have had in obtaining monthly supervision of infants during infancy. Parents should not have a feeling that they are unwarrantedly taking the busy doctor's time by bringing in a perfectly normal child for examination, but should be encouraged in this practice, if possible, a definite time should be set aside for examination of well children. Such an arrangement will not be difficult, in fact, it has been practically forced on us. Public health education has kept one step ahead of us, and we are only catching up, not leading the way.

The medical education of pediatricians in many schools has been, in a measure, incomplete, because of insufficient work in preventive pediatrics. I feel that a pediatrician without the preventive point of view is no pediatrician. The practice of pediatrics will become more and more a practice of preventive medicine. Our work with the sick, by our own effort, is being taken away from us. We aim to prevent disease which formerly we were called on to treat, thus our work has changed, but not disappeared. In the measure in which we interest ourselves in this campaign of prevention

will the public appreciate and demand our services in prevention of disease, as it has formerly done in its cure.

Pediatrics is the only branch of medicine in which the physician takes special training to do general practice in an age period. As Dr. Veeder has put it, the pediatrician should be a physician of broad medical training, who is also able to supervise the growth and development of the child and observe its reaction to environment. The distinguishing feature of a pediatrician, then, is his knowledge of preventive medicine. Just as prevention of disease is becoming the major part of our work as pediatricians, preventive measures will grow to play an increasing part in the work of the general practitioner, and if the appreciation by the public of the service rendered by the pediatrician is any criterion, the general practice of medicine should undergo a similar development, provided the general practitioner will meet the demand of the public.

THE OVERWEIGHT CHILD*

BORDEN S. VEEDER, M.D.

ST. LOUIS

During the last decade the subject of the nutrition of older children has been one of the most important and fruitful phases of pediatric study. The question of normal standards of nutrition and the many-sided problem of the cause, prevention and management of undernutrition have been attacked by numerous workers. In all this discussion, however, very little has been said of the other type of abnormal nutrition—the overweight child. This is the more surprising when one considers that obesity has been a subject not only of importance in internal medicine but also of widespread interest to the laity. My own interest has been attracted to the subject through watching the growth and development of a group of more than 200 boys in a private school of the country day type during the last four years, as in this school the overweight boy has been as much of a problem as the underweight. The general physical condition of the children in this school is not comparable with the condition of the general run of school children, as the pupils come from families in which care and attention have been paid to health and hygiene since infancy. The youngest boys are 9 years of age and the upper level is 17. As is well known, the percentage of undernourished school children diminishes as we approach the prepubescent years, whether or not specific efforts have been directed to nutrition. Our figures show only from 7 to 8 per cent each year of boys underweight for their height, and these are limited almost entirely to the lower three classes. In checking up our work each year we have found in this particular school that the percentage of overweight boys is practically the same.

The first question that arises is obviously the one of "standards." While workers are in rather general agreement that children 10 per cent or more under average weight for height, when measured by some table, as that of Baldwin and Wood, are underweight and undernourished, more critical study has shown that this is not an absolute test. In studying the overweight child, we have noted that body type or habitus plays an even greater role than with the underweight. The

*Read before the Section on Diseases of Children at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

only statement we can find in literature of the application of height-weight tables in reference to overweight is that of Emerson, who states that, when "the excess passes beyond 20 per cent, we may call the condition obese." This is not an absolute rule. While some children 20 per cent over average weight for height are decidedly obese, we have encountered others who are particularly fine, muscularly developed specimens. In our school examinations, the boys are recorded under the heading of nutrition as "poor," "fair," "good" and "over," at the time their physical examinations are made, and later the theoretical weights are calculated from the height and chest measurements and compared with the actual weight. Not infrequently a boy is recorded as "overweight" at the time of the examination whose actual weight is not 20 per cent in excess. These are borderline cases, as a rule, and usually are not problems, as, under exercise, the condition tends to correct itself. For the purpose of this paper, we have limited our material to a discussion of those children who are not only 20 per cent in excess, but who, to the casual observer, are unquestionably "fat" or obese.

An analysis of these overweight children shows that they fall into two distinct groups. First, a group with an irregular disposition of the adipose tissue, together with other physical abnormalities which are indicative of endocrine disturbances, and, secondly, a group which might be termed ordinary obesity, in which there is a generalized distribution of the excess fat tissue and there are no other abnormalities that might be considered as evidence of endocrine disorder. In our material the two groups are approximately of the same size.

In the group of nonendocrine obesity, a study of the parents showed that in every instance either one or both parents were overweight. I stress this, as the importance of heredity on the development of obesity in children has been disputed. The question has been constantly raised as to whether, in these children, heredity is the important factor or whether the obesity is due simply to the excessive ingestion of food, as it is well recognized that, when one or both parents are obese, the table is apt to be overloaded with rich food of high caloric value. Although it is impossible to settle this point definitely, it is my impression, from studying the condition of living in these families, that there is an inherited tendency in these children. The few studies of basal metabolism that have been made show no lowering of the normal rate in this type of child when there is no endocrine disturbance. In the second group, one boy presented fairly definite signs of hypergonadal secretion, and one a quite typical Frolich syndrome. The others fell into a group with definite pelvic girdle adiposity, considered by some as of pituitary origin and by others as due to lesions of some other of the endocrine glands. Certainly, nothing can be gained by a speculative discussion or classification into types of these cases, in the present uncertain knowledge of the influence of the ductless glands on nutrition and growth. The boys of this group, who, in addition to the attention attracted to them by their obesity, had either an underdevelopment or overdevelopment of the genitalia, present an added problem in their sensitiveness in regard to the abnormal condition. In none of the endocrine cases was there evidence of an inherited tendency to obesity. I consider the differentiation into the endocrine and nonendocrine groups of importance. (1) Because of the statement of some pediatricians that endocrine disorder as a

cause of obesity is rare, a statement I do not regard as correct, (2) because of the statement of some of our endocrine enthusiasts that most, if not all, cases of obesity are due to glandular disturbance, a theory for which there is no valid proof or evidence, and (3) because of the therapeutic and prognostic differences.

From the school standpoint, overweight children have been a problem for two reasons. Because of their inability to fit in with the regular play and athletic program and because of their marked tendency to injury. The fat boy is too heavy to fit in with hard exercise or play, such as football, with boys of his own class and age, and too young and immature to play with boys of his own weight but older in years and stronger. In games requiring more skill, such as baseball and tennis, they are decidedly awkward and backward as a group and hence we find them with the tendency to withdraw from competitive play and loaf, with the result that these overweight boys, who are in particular need of exercise, are the ones who have to be continually driven and supervised. Probably as a result of the excessive weight being supported by immature bones and tendons, minor sprains and accidents are unusually frequent among them. Three of the boys have developed epiphyseal lesions, one, a separation of the epiphysis of the anterior tubercle of the tibia (Osgood-Schlatter's disease) and two, a bilateral lesion of the epiphysis of the os calcis, a roentgenogram showing a condition similar to the lesion at the hip in Perthes' disease. The overweight child, however, has not been a problem from the scholastic standpoint, as the group as a whole stands very well in its studies. Thus in a group of twelve in the lower school, whose standings were checked, two were excellent, four good, five fair, and only one poor. Four of them were noted, however, as being "mentally lazy"—a matter of preadolescence rather than obesity, in all probability.

During the first year of our work at the school, no particular attention was paid to the overweight children. Studying our school records at the end of the year, we found the frequency of injury mentioned above, and further that, as a rule, the overweight child put on more weight than the average during his school year and vacation. For the last three years, therefore, we have attempted to control conditions and have found the overweight child even more difficult to manage than the underweight. Part of the explanation for this is the lack or absence of physical defects—excepting the endocrine disorders—among the overweight children, the correction of which aids so materially in the management of undernutrition. Our therapy or corrective measures, therefore, we have necessarily limited almost entirely to dietetic restrictions and to increased muscular exercise. As explained above, the susceptibility of the overweight children to accidents and strains renders increased exercise a difficult practical problem. Our individual records show that the results of many weeks of effort were frequently overbalanced by periods of days or weeks when exercise had to be limited or dispensed with altogether. The question of the limitation of diet raises a very nice theoretical problem as well as a practical one. How far can the diet of a growing developing child be cut down without the danger of injury? After considering this problem for some time and finding nothing of a scientific nature to help in the solution, we decided that our plan would be to hold the child at his weight for an indefinite period. It seemed logical to consider that if this could be done, and suffi-

cient exercise be given at the same time, the child, through the natural processes of growth, would automatically lower his excess of fat tissue. We felt that it might be dangerous to restrict the diet—granted that this were possible—to such an extent that much weight would be lost. Concretely, our plan has been to take off a few pounds by a rigid restricted diet for a week or two and then hold the weight at this level for a long time, always meeting the protein requirements and allowing as many additional calories in fat and carbohydrates as could be utilized without any weight being taken on. From a practical standpoint, this plan has not always been as successful as we had hoped, particularly if results are judged after watching the boys over a long period of many months or years and not just for a short demonstration period. Perhaps the best way to relate our experience is to cite some cases which illustrate our problems and the points that have been raised.

First, the point that the rapid growth which takes place at the preadolescent and early adolescent period tends automatically to correct the obesity, if the child's dietary can be controlled.

A boy, aged 10 in October, 1921 had a height-weight of 80 pounds (36.3 kg), and an actual weight of 116 pounds (52.6 kg) an excess of 45 per cent. In October of the following year, his height-weight was 92 pounds (41.7 kg), an increase of 12 pounds (5.4 kg), but his actual weight had increased 16 pounds (7.3 kg), to 132 pounds (59.9 kg), leaving the percentage of excess approximately the same. A strenuous effort was made with the boy and his parents through the following year. In October, 1923, his height-weight was 106 pounds (48.1 kg), or 14 pounds (6.4 kg) more than the previous October. During the year, he had actually gained but 1 pound (0.5 kg), which brought down the excess to 24 per cent and this could hardly be called obesity as his muscular development during this year was quite marked. With the change, there came about a most striking change in the boy's temperament, reaction to work and interest in school life and activity.

Another boy, with a height-weight of 77 pounds (34.9 kg), and an actual weight of 100 pounds (45.4 kg), in October, 1922 grew so rapidly during the year that, although his height-weight in 1923 was 99 pounds (44.9 kg), or an increase of 22 pounds (10 kg), the actual gain was only 11 pounds (5.0 kg), bringing the excess down to 12 per cent over the average weight for his height.

That it is not only necessary to control the child during the school year of eight months, but for much longer periods of time, and that the summer vacation is a dangerous time is well shown by the record of several boys.

Thus one boy, in October, 1921, had a height weight of 85 pounds (38.6 kg), and an actual weight of 119 pounds (54 kg), or an excess of 40 per cent. During the entire school year we held the boy's weight at this level or below, and, in May our last weighing was recorded as 116 pounds (52.6 kg). On his return to school in October, 1922 we found that while his height-weight had gone up 13 pounds (5.9 kg) during the year, or to 98 pounds (44.5 kg), during the four summer months he had not only made up the 3 pounds (1.4 kg) lost but had put on 11 pounds (5 kg) additional, and so was still 32 per cent over average weight. After eight months of coercion and persuasion he left school the following May weighing 136 pounds (61.7 kg) a gain of 6 pounds (2.7 kg) during the eight months during which time, however he had grown fairly rapidly. On his return in October, 1923 we found that the four months summer gain had been exactly 15 pounds (6.8 kg) and so he started off last fall with a height-weight of 107 pounds (48.5 kg) and an actual weight of 151 pounds (68.5 kg) an excess of 44 per cent. During the two school periods of eight months he had lost 3 pounds (1.4 kg) one year and gained 6 pounds (2.7 kg) the

second, while, during the two summer vacation periods of four months duration, he had gained 14 pounds (6.4 kg) the first year and 15 pounds (6.8 kg) the second—all of which goes to show that the results of dietetic therapy in growing boys cannot be judged on the results obtained over a few weeks or months, and that long continued control and cooperation is necessary.

The foregoing cases belong to the group of ordinary obesity, and, as a whole, we feel that our results have been fairly satisfactory with this group. In the endocrine group, the difficulty in controlling the weight has been greater. None of the cases we have encountered have been of a type amenable to specific therapy, and the use of glandular extracts in several cases has been without results. No cases of thyroid deficiency were encountered, and we have hesitated to use thyroid extract to increase metabolism, as the metabolism of the cases tested when a lowering of the rate was suspected did not show a decrease. Part of the difficulty with the endocrine cases is explained by the failure of some of the boys to grow taller at the normal or average rate of yearly increase.

One boy, in October, 1921, had a height-weight of 72 pounds (32.7 kg), and an actual weight of 87 pounds (39.5 kg). In the fall of 1923, two years later, his height-weight had reached only 75 pounds (34 kg), while his actual gain, despite restricted diet and close cooperation on the part of the parents, was 16 pounds (7.3 kg), and thus his excess over average had increased, and his obesity was more striking.

Another endocrine case, of a different type, was that of a boy with a height-weight of 105 pounds (47.6 kg), and an actual weight of 144 pounds (65.3 kg) in the fall of 1922. A year later, he had a height-weight of 107 pounds (48.5 kg), or an increase of 2 pounds (0.9 kg), and an actual weight of 170 pounds (77.1 kg), the gain of 26 pounds (11.8 kg) that year increasing his excess over the average weight for height from 27 to 60 per cent. This boy would diet faithfully for a week or so and then break diet, and gorge himself with food. A broken bone in the foot, sustained during mild play, which necessitated a plaster cast for some weeks, was an important factor.

The question may properly be asked whether it is necessary to bother with or consider the overweight child at all. So far as we know, the degenerative changes that go with obesity in the adult do not occur in childhood, but whether carrying around excessive weight early in life predisposes to a similar condition in adult life is another question on which I can find no data. Perhaps the chief reason for intervention lies in the failure of the child to adjust himself properly to his environment. He is marked out too distinctly from the other children for his own good. The willingness of the boys to cooperate certainly signifies that this is the situation. With few exceptions, we have found both the boys and their parents cooperative, and the way some of them have gone for months without candy, pastry and potatoes and with a carbohydrate intake limited almost entirely to a piece of bread three times a day has shown that the obesity has been undesirable. Considerable ingenuity has to be used to keep the stomach filled and the boy from feeling too hungry, when a diet of low caloric value is taken for a long period of time. Thin soups in large quantities, large quantities of greens, and green vegetables become decidedly distasteful after a few months, and in watching some of the children limiting their diet our only wonder has been that they do not break diet more often. Despite the failures, my belief is that our method is right, that is, not to attempt a marked reduction of the weight, but to hold the weight and let the child grow into it, so to speak. The promise that the diet

can be increased as exercise increases and more fuel is consumed, just so long as enough to lead to an increase of weight is not taken, has stimulated exercise remarkably, and boys who have been lazy and indolent in play have taken to sports as they never did before. Patience, cooperation, and perseverance over a long period of time are the essentials in treatment, and, further, we have learned never to be misled into thinking that permanent results have been obtained if the treatment has been limited to a short period of time

ABSTRACT OF DISCUSSION

DR I A ABT, Chicago I am fully in agreement with Dr Veeder's main thesis. He has avoided a consideration of the endocrine group of obese patients. I am also fully in agreement with his caution in this matter. The remaining children who are obese are difficult to account for and to treat. They do not fall into the endocrinopathic class. A certain number of children are obese on account of inactivity for one reason or another. Some are inactive because of convalescence from disease or infection. On the other hand, a large number of children overeat habitually. Certain children with voracious appetites eat between meals, they are badly managed at the table and in the home, and are in the habit of taking much larger quantities of food than they can dispose of. Often we may suspect, in this group of obese children, some primary defect in fat metabolism. They store up great amounts of fat in the tissues. The late, lamented Dr Holt used to say that normal children with their metabolic function in full adjustment, rarely eat too much. In this, he is corroborated by Drs Benedict and Lusk. There is another group in which the food supply is too high, and these children store up large quantities of fat without causing any fatty degeneration. As to treatment, the total amount of food might be reduced one-third or one-fourth, thus diminishing the caloric intake. It is not safe to reduce materially the protein intake because the children will need this in order to be sustained. They require exercise, and without reasonable protein intake they can hardly maintain full health. I think one is safe in reducing carbohydrates and fats. Occasionally, these children may have a fasting day without any harm, when they may have orange juice, prune juice, water, tea and clear bouillon, and this may be repeated once a week. They should indulge freely in physical exercise, and with such a regimen a moderate reduction in weight may be expected.

DR F P GENGENBACH, Denver The overweight as well as the underweight child brings into consideration the never ending discussion as to the relative importance of heredity and environment. Goldthwaite has shown that there are three anatomic human types: (1) the normal human, (2) the carnivorous or congenital viscerotonic, and (3) the herbivorous or broadbacked type. He also found at postmortem examinations that the carnivorous type, which is so often associated with underweight, has on the average, a shorter intestinal tract than the normal human being, while in the herbivorous type, the intestinal tract is apt to be longer than normal. Leaving out of consideration endocrine dysfunction and also the actual number of calories eaten by children of these two types is it not possible that the difference in length of the intestinal tract may be a factor causing decreased or increased absorption of the foods eaten? Then, too, there is the difference in the temperaments of the two types—the one nervous, overactive, prone to eat too fast and to digestive disturbances, and with a poor appetite for food, the other, phlegmatic, fond of eating, and taking time to eat properly.

DR LULU HUNT PETERS, New York Through a newspaper syndicate health feature, I am in touch with a great many obese people. I get many letters from children, and there is always a tone of unhappiness in these letters. I was an obese child myself, and I know that there is genuine mental suffering in being an obese child. I should like to emphasize the importance of letting the children count their own calories. A child as young as 7 years can usually count his calories and thereby take greater interest in reducing. I allow children to lose weight, but I instruct them not to lose more than one

pound a week. Their health will stand this. I have not had any letters complaining of ill effects. I allow three glasses of milk for its complete protein and lime, and I emphasize the liberal use of fruits and vegetables. I also insist on 300 calories of carbohydrates in the form of whole wheat bread, potato, etc. Most obese children eat a lot of candy, and this of course, they have to cut down markedly. I teach the children that obesity is not inherited, that they may inherit strong stomachs and weak wills, but not obesity. I do not say much about obesity due to glandular disturbance, because such a small percentage is due to this cause.

DR BORDEN S VEEDER, St Louis Dr Abt brought out the question of the endocrine glands. I have intentionally tried to avoid going into this subject. Every nutritional condition in children has been attributed to some disease of the ductless glands. To show how far this can be carried, one has only to quote a recent statement that every baby weighing more than 8 pounds (36 kg) at birth is a subject of endocrine disorder. I do not agree at all with the view of some endocrinologists that every obese child is the subject of an endocrine disorder. As stated in the paper, about 50 per cent of the children in our series were obviously endocrine cases, but in the other 50 per cent we feel very positive that there was nothing that could be attributed to the ductless glands.

THE DIAGNOSIS AND MANAGEMENT OF HEAD INJURIES*

FRANCIS R HOLBROOK, MD

DES MOINES, IOWA

Until a few years ago, the subject of cranial injuries resolved itself very largely into a discussion of fractures of the skull. At this time, fractures of the skull were thought to be an exceedingly grave condition. Many patients died, thereby supplying incontrovertible evidence in favor of this opinion. But, on the other hand, not a few recovered, and, be it known, at times these were apparently more seriously injured than some of those who died. The question naturally arises, "Why was this so?"

In the light of our present-day knowledge of this subject, the answer to our question is not difficult. We now know that a fracture of the skull per se is not particularly serious and that it becomes a thing of real moment only when complicated by injury to the intracranial structures. This being so, in discussing the subject of head injuries, we must place special emphasis on the status of the intracranial contents, relegating to a place of secondary importance the matter of the skull, which may be intact or may be the seat of a fracture. There is one exception to this statement, and that is depressed fractures of the vault, which must in all cases be recognized and appropriate measures taken for their relief.

While serious intracranial injury can and does occur as a result of trauma that is insufficient to fracture the skull, nevertheless, most cases of intracranial injury are accompanied by the latter condition. Every case of head injury should be regarded as a possible fracture of the skull until definite proof to the contrary is obtained. Simple linear fractures of the vault are frequently impossible of diagnosis without the aid of the roentgen ray. Therefore, every case of head injury should be subjected to roentgen-ray examination.

There are cases in which depressed fractures of the vault can scarcely be diagnosed in any other manner. I refer to the cases in which there is hematoma of the scalp. Under such circumstances, the condition of the

* Read before the Section on Surgery, General and Abdominal at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

underlying bone is a matter of conjecture, and its exact status can be determined only by the roentgen ray or by incision of the hematoma and direct inspection of the bone.

We have stated that intracranial injury is the all-important factor in head injuries. How are we to determine the presence or absence of this complication? We know that injury to any of the cerebral structures is accompanied by increase in the intracranial pressure, which, when it reaches a high enough point and is maintained, produces all the serious symptoms commonly observed in these cases and eventually death. How, then, to determine whether we have an increased pressure, and, if so, to what degree? Formerly, our only guide in this condition was clinical symptoms, such as slow pulse, slow respiration, paralysis, coma, symptoms we now know to be due to medullary compression, which is a terminal state, and one wherein it is too late for any relief. The presence of an increased pressure must therefore be recognized before these symptoms supervene, if we are to be in a position to render these patients proper care.

Probably the most important, as well as the most accurate, means at our disposal for the estimation of intracranial pressure is the spinal manometer. By the use of this instrument we are enabled to read, in millimeters of mercury, the exact pressure existing within the skull. Normally, the pressure ranges from 7 to 9 mm., and anything above 15 mm. is to be considered as pathologic. Having determined the pressure in any given case, we should next ascertain whether or not the pressure is increasing, because, if it is, relief must be afforded, otherwise, medullary compression is most apt to result, and we have lost our chance of doing anything worth while for our patient. Subsequent readings, made at short intervals, are to be carried out, and in this way interference or noninterference is clearly indicated.

Much has been said concerning the value of blood pressure in estimating intracranial pressure. It should be taken, of course, as part of a thorough examination of the patient, but my own observations thus far have tallied with those of most observers, who feel that it is too variable to be of much help. Many cases of serious intracranial pressure have occurred in which the blood pressure has not been at all significant, and in which, had the latter been regarded as an accurate criterion of intracranial pressure, no action would have been taken until the development of signs of medullary compression indicated that all hope was lost.

Having determined that, in any particular case, we are dealing with a case of intracranial pressure which demands relief, by what means is this to be accomplished?

The generally accepted opinion has been that cranial decompression affords the only satisfactory plan for dealing with this condition. In the last several years, however, it has been quite conclusively shown that spinal drainage can be employed with perfectly satisfactory results and the increased pressure relieved in this manner. This method has been opposed as hazardous because of the danger of the medulla becoming wedged in the foramen magnum, due to sudden release of the spinal fluid under pressure. I believe that the fear of this accident has been overemphasized, and a search of the literature for reports of this complication has yielded the information that, in many hundreds of spinal taps, sudden death has resulted in a very occasional instance, and this has occurred, in nearly every

case, in patients suffering from increased pressure from brain tumors and other chronic conditions. I feel safe in saying that if the spinal fluid is withdrawn with the patient in the recumbent posture and if not more than from 10 to 15 c c is removed at a sitting, little, if any, danger will be encountered by this procedure.

The study of the condition of the intracranial pressure in any given patient should begin as soon as the patient rallies from shock. This may be in an hour or so after the injury, in cases which seem to be mild, or it may be delayed a number of hours in severe cases. Cases of head injuries follow the same rules, as far as shock is concerned, as any other surgical condition, viz., nothing should be done during the stage of shock except to treat the shock. When the shock has cleared up, a reading of the intracranial pressure should be made, and if it is found to be above normal, some fluid should be removed, anywhere from 5 to 15 c c. In three or four hours another reading should be made, and if the pressure is found to have again reached a point in excess of normal, more fluid should be removed. If, however, the reading shows that the pressure has not increased, no fluid should be drawn off and another reading need not be made for six or eight hours, at which time a normal pressure would indicate that, in all probability, no intracranial damage is present. If an increase in pressure is found, it should be reduced by another withdrawal of fluid.

It is quite well known that increased pressure gives rise to choked disk, but I should like to emphasize the point that if one is to rely on this sign for information as to increased pressure in acute cranial conditions, he will make a serious error, owing to the fact that choked disk is a late sign, and by the time that it occurs, any chances for helping the patient have vanished. The early signs of pressure, as seen in the fundus, consist of an engorgement of the retinal vessels and a blurring of the edge of the optic disk. The blurring of the edge of the disk is the first stage of a choked disk, and any relief that is contemplated should take place long before the disk becomes choked, for by this time the condition within the skull has progressed too far to be benefited by operation.

The other alternative to spinal drainage, in treating increased pressure cases, is decompression, usually by the subtemporal route. If this method is used, a good sized opening in the skull should be made beneath the temporal muscle. The dura should be open to the limit of the skull opening and the temporal muscle sutured over the brain, leaving the dura unsutured.

The operation is best done on the right side of the head to avoid any possibility of injury to the speech area. If necessary, a second decompression operation can be done on the opposite side.

There are two conditions which cause an increase in intracranial pressure to which the foregoing statements do not apply. These are depressed fractures of the vault and extradural hemorrhage. It is quite obvious that all depressed fractures of the vault should be operated on as soon as possible. This is just as much an emergency operation as an acute appendicitis or acute osteomyelitis. The depression should be elevated or removed, and the scalp closed over the defect without drainage, except in a certain few cases of compound depressed fractures.

In the extradural hemorrhage cases, operation must, of course, be performed and the torn vessel ligated just as soon as a diagnosis is made. In most cases of hemorrhage it is the middle meningeal artery that has been

injured As a rule, these hemorrhage cases are not difficult of diagnosis if the patient is under careful observation from the time of his injury. The most significant symptom of all is the sudden development of unconsciousness after a conscious interval. This should always immediately arouse in our minds the suspicion of an extradural hemorrhage. Following this, the patient will develop signs of pressure and a paralysis corresponding to the area of the brain encroached on. Nothing more is needed in the way of information with which to make diagnosis. The remedy is plain.

SUMMARY

The following are the important points to be considered in the management of these cases of cranial injury.

- 1 Shock should be treated first.

- 2 As soon as possible, the status of intracranial pressure should be determined by direct reading at lumbar puncture, by examination of the eyegrounds, and by observation of symptoms.

- 3 It should be determined whether pressure is stationary or progressive.

- 4 Pressure should be relieved by spinal drainage or decompression.

- 5 All depressed fractures of the vault should be operated on.

Bankers Trust Building

ABSTRACT OF DISCUSSION

DR FREDERIC A. BESLEY, Chicago. I have seen skull fractures in my own work as well as in Dr. Jackson's service at Cook County Hospital. He has advocated for many years the practice of spinal puncture for drainage and relief of pressure. Our results have not been satisfactory. There must be a reason for these indifferent results. It is obvious that not all these cases are cases of edema. I have observed post mortem that at least 80 per cent of skull fractures involve both the vault and the base. I am inclined to believe that the manometer does not show the exact degree of pressure within the cranium. Many factors enter into that situation which materially affect pressure in the spinal arachnoid spaces as compared with pressure in the intracranial arachnoid spaces. Obviously, the closure of the aqueduct of Sylvius or the closure of the space between the third and fourth ventricle does occur. There is another factor. I think it has been definitely shown that there is a space between the dura and the arachnoid which is not drained by draining the arachnoid space. I should like to suggest that at the necropsy we try to determine, by forcing the needle into the arachnoid space of the spine, in what percentage of cases it drains the lateral ventricle. Dr. LeCount has shown that there is edema of the brain in all cases in which death occurs following brain injuries. But there is another factor on which too little stress is laid, that is, the little fine, petechial hemorrhages that occur throughout the brain. How many see cases without much gross hemorrhage and in which gradually coma develops and then the patient dies? The necropsy does not disclose a massive hemorrhage but it does disclose petechial hemorrhages, and I think that these petechial hemorrhages cause death. Do not misunderstand me, I believe that Dr. Holbrook is right in saying that spinal puncture should be made and made repeatedly, with manometer check, but so far my results have been disappointing. One thing about the relief of pressure. I am still of the old school that believes in making a large opening in the skull and turning down a flap. I know that this is not orthodox at present but I have seen many cases come to necropsy in which, if I had gone 1 inch farther, I should have found a large clot which did not give rise to any focal disturbances but which was evidently the cause of death. In desperate cases, it is the only chance.

DR KELLOGG SPEED, Chicago. I wish we could look on skull fractures and cranial injuries as such a simple matter as edema

of the brain. There is certainly much more pathologic significance to that. I agree that hemorrhage is a frequent cause of these lesions. When one studies at necropsy the skulls after these injuries, one finds a surprisingly high percentage of fractures. The roentgen ray will fail to show a base fracture in more than 15 or 20 per cent, so that, as a diagnostic means, it has very little value for that type. It should be used, however. The mere fact that edema occurs will not explain some of the symptoms we see in these lesions. Taking the aphasia, for instance, we must have focal hemorrhages to explain the different forms of aphasia that occur so frequently. In spite of having used spinal puncture ever since Quincke's time, we still find that the mortality in skull fractures is around 50 per cent. Some years, in a hospital service, it may go down to 40, but on the average it is still 50 per cent, just what it was fifteen or twenty years ago. Spinal puncture will help in some cases. For practical purposes, we can divide skull fracture into three classes. The first class includes the moribund cases. They have pallor, disturbed respiration, and one knows that these patients are going to die. No amount of spinal puncture or decompression will help. Along with this class are the open or compound fractures, many of which will survive if infection is kept out because they have decompressed themselves by an opening in the skull. The second class presents signs of increased intracranial pressure. I am not trying to classify them particularly, but they may have unconsciousness, slow pulse, rise in blood pressure or rise in spinal pressure, and they are subjects for treatment by spinal puncture. In the third class there is some disturbance in consciousness or respiration, but not coma. These patients will get well without spinal puncture and without decompression or other treatment except rest in bed. One cannot tell by the spinal manometer just exactly what the intracranial pressure is. It furnishes an indication in some cases of increased intracranial pressure, but just as we have come to disregard the absolute findings of blood pressure, we surely eventually will disregard the absolute findings of the spinal manometer.

DR GEORGE W. SWIFT, Seattle. Dr. Holbrook has dwelt on a phase of the subject of brain injuries, namely, edema of the brain which is quite important, but he failed to emphasize the eye findings in these cases. I have always been accustomed to expect choked disk in intracranial lesions. As a matter of fact, in acute head injuries there is only one type that gives choked disk, and that is an arteriovenous aneurysm in the cavernous sinus. There is another important eye finding in edema of the brain which is also of great importance, that is, a congestion on the surface of the disk. This is due to a retardation in the venous return from the cranium. We consider this so important that in the last five years in Seattle City Hospital every intern has been taught to use the ophthalmoscope and to look for this particular condition in all cases of head injuries. Regarding the use of spinal drainage, one cannot always obtain permission to tap the spine. This is especially true in small communities and something must be done to control the edema in head injuries. In such a case, the use of magnesium sulphate is indicated. In this, I concur with Dr. Holbrook. The time to treat brain injuries is at the time of the injury, not six months or a year later. Certain cases do not respond to any treatment, but others will respond, and that is the time to institute treatment.

DR M. E. BLAHD, Cleveland. The guide I have always used in diagnosis, in these cases, is whether the patient is momentarily unconscious or whether he is unconscious for a protracted period. The patient who is only momentarily unconscious, or not unconscious at all, one need not worry about. Practically, every one of those patients will get well without treatment, unless there is a compound fracture. As far as treatment is concerned, I do not believe that any treatment is necessary when they are in deep coma. I do not believe that there is any treatment of very great value because every patient who is in deep coma is in a state of severe shock and a decompression operation on such a patient is sure to be fatal. As far as lumbar puncture is concerned, I know nothing of its value in diagnosis or treatment. I cannot see how draining 5, 10, 15 or 20 c.c. of spinal fluid will relieve any intracranial tension when we consider how quickly spinal fluid is reformed. I agree with Dr. Speed that if these patients are left alone we

shall get as good results as when they are drained or otherwise operated on. In a fairly large series of cases, we have had a mortality in head injuries of 37 per cent. I think that a part of the mortality rate is due to the fact that when we first started we were too enthusiastic and operated in too many of these cases. In the last few years we have operated in practically none, except those in which there was extradural or intradural hemorrhage. In those cases, decompression practically always cures.

DR FRANCIS R. HOLBROOK, Des Moines, Iowa. I agree with Dr. Speed and Dr. Besley that lumbar puncture has its limitations. It is not advocated as a panacea or as a 100 per cent measure. It is at least a rational form of treatment. One has to do something for these patients. Many of them do not need it, but I spoke of those that do need something in the way of treatment. While it will not save all patients, it will have a good effect in a large group of cases. Regarding Dr. Speed's remarks about the manometer, it is true that it is not absolutely accurate, but formerly we did not have anything at all to go on. We waited until the patient sank into coma with respiration of 5 or 6 a minute and a heart rate of 20 before we got any indication of the pressure. The spinal manometer gives an indication of the intracranial pressure. It may not be accurate, but it is a big help. As to Dr. Bland's remarks about operating on a patient in shock, no one operates on a patient in shock; there is nothing to be gained by so doing. The decompression operation, as he said, is strictly limited to those cases presenting focal signs of either foreign bodies or extradural hemorrhage.

THE CURE OF SCARLET FEVER COMPLICATED WITH ERYSIPELAS AND STREPTOCOCCUS SEPTICEMIA

BY INTRAVENOUS INJECTION OF MERCUROCHROME 220 SOLUBLE

HUGH H. YOUNG, M.D.
AND
KONRADE BIRKHAUG, M.D.
BALTIMORE

In conjunction with Miss Hill, one of us has reported¹ a series of cases in which septicemias and localized infections had been cured by intravenous injections of mercurochrome-220 soluble. Since this paper appeared, many other patients have been subjected to the same treatment. Most of them were similar to the cases detailed in our paper. The two cases presented here, however, are quite different in type and demonstrate a wider field of usefulness for mercurochrome. The results obtained in a case of very severe scarlet fever with complications and in a second case of streptococcus pneumoniae are so striking as to warrant their publication. A short time ago, confident that mercurochrome would be of great value in severe cases of scarlet fever

associated with streptococcus infection, which Dochez and others have shown to be the causative agent in scarlet fever, we obtained permission of Dr. Birkhead Macgowan, director of the Sydenham Hospital for Infectious Diseases, to use the drug in such cases, especially those in which the serum treatment had been tried without success (Case 1).

REPORT OF CASES

CASE 1—M. A., a boy, aged 4 years, was admitted to Sydenham Hospital, March 2, 1924, with flushed cheeks, discharging nose, sordes on the lips, the entire faucial ring deeply strawberry red, and both tonsils slightly enlarged, amembranous, cryptic and slightly exudative. The temperature was 103.2 F, the pulse, 135, and the respiration 28. A diagnosis of scarlet fever was made.

March 4, the seventh day of the disease, tachycardia and toxic symptoms were increased. The patient became very drowsy, unwilling to partake of food or fluids, and frequently cried about the angina of the neck. The faucial ring had not abated in the intensity of the strawberry red injection. The cervical glands were rapidly growing in size and increasing in tenderness. During the afternoon, diffuse redness over the right cheek developed. The right eyelids became markedly swollen and injected, and could not be opened. The development aroused suspicions of erysipelas. The temperature was 104.4 during the entire afternoon, the pulse, 138, and respiration 34.

March 5, the angular condition had progressed so that the patient opened his mouth with difficulty and with considerable pain. The cervical glands were boardlike in consistency but not fluctuating nor readily movable, although the overlying skin was free. The erysipelas of the right side of the face had extended rapidly from the angle of the jaw toward the supra-orbital area in the midline, involving the eyelids heavily. Induration and hyperemia were marked. The toxic condition of the patient was aggravated, he was restless, resisted taking fluids and food, vomited profusely at 8:30 p. m., and passed loose stools during the evening. The spleen was large and tender, and lymph nodes in the axillae and the groin were palpable. The skin was very hot, dry and scaly. The blood examination revealed leukocytes, 30,600, polymorphonuclears, 82 per cent, polymorphonuclear basophils, 0, polymorphonuclear eosinophils, 4 per cent, lymphocytes, 11 per cent, and mononuclears and transitionals, 3 per cent. On account of the growing toxic symptoms and complications it was thought advisable to use Dochez' antistreptococcic scarlatinal serum. At 10:30 p. m., after a preliminary sensitization test had proved negative, 40 c.c. of the serum was injected intramuscularly in the right buttock.

March 6, at 9 a. m., a slight drop in the temperature was noted after the serum injection, from 104 to 101.6, and the pulse from 140 to 100, but the toxic symptoms were as marked as they were before the serum injection. The erythema of the face had spread beyond the midline of the face, and had widened in all directions, at least 3 cm. during the last twelve hours. The redness seemed much the same, and the subcutaneous induration was still boardlike, no vesicles had formed. The cervical glands were remarkably hypertrophied and firm in consistency. The fauces were deeply injected, the tonsils, large, cryptic and nonmembranous, the tongue was dry and straw-colored, and the papillae were strikingly enlarged. The white blood cells were 28,560, polymorphonuclears, 87 per cent, polymorphonuclear eosinophils, 0, lymphocytes, 8 per cent, and myelocytes and transitionals, 5 per cent.

At 10 p. m., the same day the general condition was unchanged. The toxemia persisted and the patient was semidelirious. The erysipelas had spread to the malar prominence of the left cheek, forming an area 5 cm. in diameter. The erythema on the right side had extended to the entire ear, under the angle of the jaw and backward to the midline in the occipital region, the color being everywhere deep red and the subcutaneous induration and the edema very heavy and firm. The temperature had risen to 104.2. The patient had vomited frequently, the stools were loose, occasional chills

1 Young, H. H., and Hill, Justina H. Treatment of Septicemia and Local Infections by Intravenous Injections of Mercurochrome 220 Soluble and of Gentian Violet. J. A. M. A. 82: 669 (March 1) 1924.

2 We have had so many requests for details of the technique used that it seems well to state them here. A simple 1 per cent solution is made with hot distilled water, using the ordinary tablets of mercurochrome 220 soluble. It is not sterilized as it is sufficiently antiseptic. A good vein is selected (generally at the bend of the elbow) and the injection is made slowly with a large sterile glass syringe. At least 5 mg. per kilogram of body weight should be employed. This amounts to about 23 c.c. of a 1 per cent solution of mercurochrome to each hundred pounds of the patient's body weight. In Case 1, 7.5 mg. per kilogram were given (34 c.c. of a 1 per cent solution per hundred pounds) practically without reaction. In some cases marked nausea followed by severe diarrhea follows but this ceases after a day or two. As was remarked in the first paper when dealing with a desperate case in which the only hope of cure lies in introducing the drug in sufficient quantity to sterilize the blood and if possible the local focus the initial dose should be large. We have never used more than 8 mg. per kilogram. The treatment is not repeated for several days and then only if necessary. In the case of gentian violet we now employ a 0.5 per cent solution and give 5 mg. per kilogram (46 c.c. of a 0.5 per cent solution per hundred pounds). The reactions from gentian violet are not gastro-intestinal. It is noteworthy that in Case 1 albumin and casts that were present in the urine before treatment disappeared after the intravenous injection of mercurochrome 7.5 mg. per kilogram.

had taken place, and the delirious status remained unchanged. The blood examination revealed white blood cells, 34,500, polymorphonuclears, 83 per cent, polymorphonuclear eosinophils, 0, lymphocytes, 15 per cent, and myelocytes and transitionals 2 per cent. A blood culture was made, with 1 cc of blood in meat agar infusion, there were thirty-eight colonies of *Streptococcus hemolyticus*, the area of hemolysis being 2 mm per colony, after twenty-four hours' incubation.

March 7, at 11 p m, the temperature had risen steadily to 106 F and the pulse to 145. The drowsiness and deliriousness remained unchanged, and the erysipelas had extended, in all directions, about 2 cm during the last twenty-four hours. The child had vomited three times. The urine showed one plus albuminuria with many white blood cells, and a few granular casts. The blood examination revealed white blood cells 32,780, of which polymorphonuclears were 85 per cent, polymorphonuclear eosinophils, 0, lymphocytes, 7 per cent, and myelocytes and transitionals, 8 per cent.

March 8, at 9 p m, the temperature was again 105, the pulse 140 and respiration 37. There was no improvement in the general condition. The erysipelas had spread markedly behind the right ear and into the occipital region, the tenderness was acute, and the skin was strikingly hyperthermic. The glands at the angle of the jaw, on each side were still much enlarged. The faucial ring was unchanged. The general condition was aggravated. The urine showed two plus albumin, many white blood cells and red blood cells and a few granular casts and bacteria. The blood culture was the same as that of the 6th, *Streptococcus hemolyticus* was definite in the subculture. The blood examination at 9 05 p m revealed white blood cells, 36,960, polymorphonuclears, 87 per cent, polymorphonuclear eosinophils, 0, lymphocytes, 9 per cent, and myelocytes and transitionals, 4 per cent. As the patient was steadily growing worse, the condition was desperate, the injection of serum three days before had not arrested the progress of the disease, and the patient had thereafter continued to grow worse, it was decided to administer mercurochrome-220 soluble intravenously.

March 8, at 9 10 p m, an intravenous injection of 15 cc of 1 per cent solution, equal to 75 mg per kilogram of the patient's body weight, which was 20 kg, was given. The blood examination two hours later (11 08 p m) revealed white blood cells 22,900, polymorphonuclears, 61 per cent, polymorphonuclear eosinophils 0, lymphocytes, 34 per cent and the myelocytes and transitionals, 5 per cent. The platelets were increased. There was no basophilia or eosinophilia. There was no marked reaction as a result of the intravenous injection of the mercurochrome.

March 9, the general condition of the patient had markedly improved, particularly in the mental status which was now clear and atoxic. He talked with the nurses and preferred sitting up in bed most of the time. The deliriousness had entirely disappeared. The redness of the face was less intense, and there had been no untoward symptoms following the injection of mercurochrome, no nausea, vomiting or diarrhea were observed. He had been voiding freely and the urine showed definite fluorescence of mercurochrome, likewise, traces of the chemical had been found in the stools. The most striking feature was the complete sterilization of the blood as early as twelve hours after the injection of mercurochrome. It was not thought advisable to disturb the patient during the night for a blood culture.

The following cultures were taken

9 05 a m (12 hours after injection) No colonies grown (confirmed subsequently)

11 30 a m (fourteen hours after injection) No colonies grown (confirmed subsequently)

4 20 p m (seventeen hours after injection) No colonies grown (confirmed subsequently)

There was a drop in the temperature from 105 to 101, within fifteen hours after the injection, and likewise in pulse rate from 140 to 98 within the same period. The blood examination revealed white blood cells, 15,200, polymorphonuclears, 84 per cent, polymorphonuclear eosinophils 2 per cent, lymphocytes, 11 per cent, and myelocytes and transitionals, 3 per cent.

March 10, the redness of the face had almost entirely disappeared, and the subcutaneous edema was mostly absorbed except in the upper portion of right ear, which was still deeply red and markedly tender to the touch. Desquamation was in full progress over the entire face affected by the exanthem. The eyelids were apparently normal, and there was no residual conjunctivitis. The sordes had almost gone, the tongue was moist, less intensely red, and the recession of the papillary hypertrophy was extraordinary. The entire faucial ring was reduced to normal except for slightly enlarged tonsils. Otherwise, the physical examination was negative. Mentally, the patient was alert and talkative and appeared comfortable. There have been no untoward constitutional symptoms since the injection of the mercurochrome. The temperature rose to 105.6 F, and the pulse to 146, and fell during the afternoon to 102, and the pulse to 100. A blood culture taken at 7 35 p m (forty-six hours after injection) showed no colonies (confirmed on examination several days later). The blood examination revealed white blood cells 14,460, polymorphonuclears, 79 per cent, polymorphonuclear eosinophils, 1 per cent, polymorphonuclear basophils, 0, lymphocytes, 13 per cent, mononuclears, 4 per cent, and transitionals, 3 per cent.

March 11, the temperature was 99.8, the pulse rate, 88, and the respiration, 28. There was remarkable improvement in the facial condition. The injection and the edema had entirely disappeared, and the right ear was quite normal in appearance. The cervical glands were slightly palpable, and the faucial ring showed nothing remarkable, the color of the mucous membranes being pale, the tonsils diminished in size and not tender to pressure. The white blood cells were 9,160.

An examination of the stools made by Dr W W Scott at 4 a m, March 9 (seven hours after the injection of mercurochrome) showed them to be semisolid, pinkish yellow, and definitely stained with mercurochrome. At 8 30 a m (eleven and a half hours after the injection of mercurochrome) there was rather a high concentration of mercurochrome. At 4 p m (nineteen hours after the injection of mercurochrome) there was no microscopic blood or mucus, there was a moderate amount of mercurochrome. In the stools at 11 p m (twenty-six hours after the injection) no mercurochrome was found, no blood and no mucus.

March 12, the patient's progress had been uneventful. The face was normal in appearance, of good color, and erysipelatous redness and edema had entirely cleared away, leaving behind a thin layer of desquamation. The fauces and tonsils were almost normal, the cervical glands were slightly enlarged and somewhat tender to pressure. The chest, abdomen and extremities were normal. The urinary output was good. There was no albuminuria. This showed remarkable improvement since the injection of mercurochrome. The temperature was 100, the pulse rate, 98, and the respiration, 30, at 8 a m. At 8 p m, the temperature rose to 103.6. On physical examination the patient showed nothing definite except enlargement of the cervical glands. The blood examination revealed white blood cells, 12,400, polymorphonuclears, 79 per cent, polymorphonuclear eosinophils, 1 per cent, polymorphonuclear basophils, 0, lymphocytes, 13 per cent, mononuclears, 5 per cent, and transitionals, 2 per cent.

March 13, the general condition was good. There were no untoward symptoms. The cervical glands were not palpable. The fauces showed nothing remarkable. The tonsils were normal. The temperature was 97, the pulse rate, 84, and respiration 22 at 8 a m, and the temperature was 97.2 at 8 p m.

The blood examination revealed white blood cells, 9,160, polymorphonuclears, 81 per cent, polymorphonuclear eosinophils 1 per cent, polymorphonuclear basophils, 0, lymphocytes 13 per cent, mononuclears, 3 per cent, transitionals, 2 per cent.

March 14 the patient looked fine. The temperature was 98.4, the pulse rate, 94, the respiration, 24. Blood examination revealed polymorphonuclears, 78 per cent, polymorphonuclear eosinophils, 1 per cent, polymorphonuclear basophils, 0, lymphocytes, 16 per cent, and mononuclears, 5 per cent.

Every day the urine had been examined, and the following changes had been noted from time to time. Before the injection of mercurochrome, the urinalysis showed two plus albumin, and numerous hyaline and granular casts. The specific gravity was about 1.021. There were also numerous white blood cells and red cells, and a stained specimen showed both bacilli and cocci in large quantity in freshly voided urine. A specimen of urine taken twenty-four hours after the intravenous injection of mercurochrome showed a remarkable change in that the urine had become clear, the red and white blood cells had apparently disappeared, no casts were seen and there was no trace of albumin. Cultures taken from the urine also showed no infection, and subsequent studies have also shown that the urine was absolutely sterile. One week after the injection of mercurochrome, urinalysis was as follows: specific gravity, 1.016, acid reaction, amber, absolutely clear, no albumin. Microscopically, it showed just a few epithelial cells and occasional white cells. There were no bacteria.

March 16, the patient's condition was excellent. The infection of the throat and glands had disappeared. The temperature was normal. The urine was normal. The patient was discharged.

This case was an example of scarlet fever with the most malignant form of streptococcus infection. The result obtained, however, was no more remarkable than that detailed in a report of a case received from Dr. George Martyn of Los Angeles.

CASE 2—A patient with rapid pneumonia beginning with the left lower lobe, with swollen painful joints, following a dental extraction, remained in this condition for several days, then the right lower and middle lobes became infected. The temperature ranged from 102 to 104 typically septic, cultures gave *Streptococcus hemolyticus*. There were no pneumococci. The patient was rapidly going down, the temperature was 104, she was cyanotic, the pulse was 140, and every joint was swollen. At this time the article on mercurochrome-220 soluble¹ was seen, and immediately the solution was made up and 20 cc was administered intravenously, 5 mg of 1 per cent mercurochrome being allowed to each kilogram of body weight. Within an hour, she began to show rigor, which continued severely for three hours, the temperature going up to 105. Then profuse perspiration began; this was followed by sleep. The next morning the temperature was 99.6, the pulse 96. She began to expectorate freely, the tongue clearing. She had eight bowel actions in the first twelve hours. The appetite coming back rapidly. The most gratifying result of all was the cessation of all joint symptoms immediately. The temperature has remained below 100 ever since, and today her temperature is normal. There is no doubt that this drug saved the patient's life.

Postmortem Examinations—The method of making postmortem examinations most generally followed is that originally taught by Virchow. The strongest adverse criticism which can be made of the method is that it works best when the various organs in the body are nearest normal. Its chief fault lies in the early separation of the different structures from each other so that interesting pathologic relations are often overlooked and destroyed. Two other methods of making postmortem examinations were developed besides that of Virchow's but have never attained the same general recognition, although both contain principles of great value. The technic of Rokitsansky, lately best exemplified by Chiari, appeared in printed form a number of years ago. Its fundamental principle is to examine and open every organ *in situ* before removing it, so that all abnormal relations between organs, blood vessels and other structures can be discovered and preserved intact. Recently, Hauser has published Zenker's postmortem technic. Its main principle is to remove the organs in block, so that they can be examined from every side and incised before they are separated from each other. Mallory and Wright, *Pathological Technique*, Ed. 8, Philadelphia: W. B. Saunders Company, 1924.

THE DICK TEST

SOME SUGGESTIONS FOR ITS PRACTICAL APPLICATION*

WESLEY E. GATEWOOD, M.D.
IOWA CITY

When the skin test for susceptibility to scarlet fever was reported by G. F. and Gladys H. Dick,¹ it seemed to me that I might at once make some practical application of their discovery. I proposed first to determine the reliability of the test by employing it as a routine in all cases of scarlet fever admitted to the isolation hospital, both early and late in the course of the disease. I also hoped to test the susceptibility of those who had come in contact with scarlet fever in the general wards of the University Hospital. If the test proved reliable and an active immunity could be developed, it seemed that the test might be used to determine the susceptibility of various persons who are frequently exposed, determining which ones should be immunized. Further, as it is frequently necessary to isolate patients who are suddenly taken ill with erythema and other symptoms suggestive of scarlet fever, but in whom sufficient signs are lacking to make a definite diagnosis, it was hoped that this intradermal test might be helpful in arriving at an early diagnosis. This would economize hospital space, particularly at times when scarlet fever and diphtheria are unusually prevalent, since it would permit us in some instances to distinguish between scarlet fever and the noncontagious erythematous conditions, patients with the latter might be returned to the general hospital if they were found to be immune to scarlet fever. With mild scarlet fever it has often been necessary to wait for desquamation or other corroborative signs to prove the diagnosis.

When a group of nurses, students or patients has been exposed to scarlet fever, it would be of considerable value if, by such an intradermal test, those who are susceptible could be segregated and those who are not susceptible permitted to go free. If an antitoxin was available or if an active immunity could be developed without the disease actually being contracted, the Dick test might prove of value in recognizing those who are susceptible and in need of active or temporary passive immunity after exposure to scarlet fever. In other words, just as has since been suggested by various investigators of the scarlet fever problem, especially Dochez,² it seemed from the reports of the Dicks that the disease in its chief manifestations is like diphtheria and that the Dick test might be useful in the same manner as the Shick test.

Dr. George F. Dick provided a small supply of the diluted toxin, which was exhausted in the tests. An attempt was made to prepare our own toxin, cultures being taken of the throats of some of the persons with scarlet fever, and filtrates from the broth cultures being prepared. A moderately concentrated toxin was obtained, but as the detail of the method of the Dicks was not known, the solution was not concentrated sufficiently to eliminate the nonspecific protein reactions and still give strong specific scarlet-fever toxin reactions. Naturally, there are certain optimal cultural methods or conditions for the preparation of this toxin, just as with diphtheria toxin and tetanus toxin. This

* From the State University of Iowa College of Medicine.
1 Dick, G. F. and Gladys H. A Skin Test for Susceptibility to Scarlet Fever. *J. A. M. A.* 82: 265 (Jan. 26) 1924.
2 Dochez, A. R. and Sherman, Lillian. The Significance of *Streptococcus Hemolyticus* in Scarlet Fever. *J. A. M. A.* 82: 542 (Feb. 16) 1924.

part of the work was started by F W Mulsow, and, when scarlet fever is again prevalent, further investigation will be carried on. The technic of the intradermal tests was that described by the Dicks.

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From the reports in the literature and from the experience here reported, it seems that this test may serve as an aid in the early diagnosis of scarlet fever. Early, a positive reaction is an additional proof of the disease being scarlet fever, and a negative test is against scarlet fever; late, a positive reaction is against the diagnosis of scarlet fever, provided sufficient time has elapsed for the development of immunity.

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Professor of Materia Medica and Therapeutics and Assistant in
Pharmacology Respectively University of Michigan
Medical School

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Certain other nerves than those mentioned are involved in the paralysis, special mention being made of the vagus, which was found inactive in some cases and only feebly active in others. Finally, it was pointed out that all the clinical symptoms of botulism, which are purely motor in character, may be explained by this peripheral action of the toxin without calling in any other action whatsoever, at the same time, the fact

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¹ Edmunds C W and Long P H. Contribution to the Pathologic Physiology of Botulism, J A M A 81 542 (Aug 18) 1923 Tr A. Am Phys 35 210 1923.

Every day the urine had been examined, and the following changes had been noted from time to time. Before the injection of mercurochrome, the urinalysis showed two plus albumin, and numerous hyaline and granular casts. The specific gravity was about 1.021. There were also numerous white blood cells and red cells, and a stained specimen showed both bacilli and cocci in large quantity in freshly voided urine. A specimen of urine taken twenty-four hours after the intravenous injection of mercurochrome showed a remarkable change in that the urine had become clear, the red and white blood cells had apparently disappeared, no casts were seen, and there was no trace of albumin. Cultures taken from the urine also showed no infection, and subsequent studies have also shown that the urine was absolutely sterile. One week after the injection of mercurochrome, urinalysis was as follows: specific gravity, 1.016, acid reaction, amber, absolutely clear, no albumin. Microscopically, it showed just a few epithelial cells and occasional white cells. There were no bacteria.

March 16, the patient's condition was excellent. The infection of the throat and glands had disappeared. The temperature was normal. The urine was normal. The patient was discharged.

This case was an example of scarlet fever with the most malignant form of streptococcus infection. The result obtained, however, was no more remarkable than that detailed in a report of a case received from Dr. George Martyn of Los Angeles.

CASE 2—A patient with rapid pneumonia beginning with the left lower lobe, with swollen painful joints, following a dental extraction, remained in this condition for several days, then the right lower and middle lobes became infected. The temperature ranged from 102 to 104 typically septic, cultures gave *Streptococcus hemolyticus*. There were no pneumococci. The patient was rapidly going down, the temperature was 104, she was cyanotic, the pulse was 140, and every joint was swollen. At this time the article on mercurochrome-220 soluble¹ was seen and immediately the solution was made up and 20 cc was administered intravenously, 5 mg of 1 per cent mercurochrome being allowed to each kilogram of body weight. Within an hour, she began to show rigor, which continued severely for three hours, the temperature going up to 105. Then profuse perspiration began, this was followed by sleep. The next morning the temperature was 99.6, the pulse 96. She began to expectorate freely, the tongue cleaning. She had eight bowel actions in the first twelve hours, the appetite coming back rapidly. The most gratifying result of all was the cessation of all joint symptoms immediately. The temperature has remained below 100 ever since, and today her temperature is normal. There is no doubt that this drug saved the patient's life.

Postmortem Examinations—The method of making postmortem examinations most generally followed is that originally taught by Virchow. The strongest adverse criticism which can be made of the method is that it works best when the various organs in the body are nearest normal. Its chief fault lies in the early separation of the different structures from each other, so that interesting pathologic relations are often overlooked and destroyed. Two other methods of making postmortem examinations were developed besides that of Virchow's, but have never attained the same general recognition although both contain principles of great value. The technic of Rokitsansky, lately best exemplified by Chiari, appeared in printed form a number of years ago. Its fundamental principle is to examine and open every organ in situ before removing it, so that all abnormal relations between organs, blood vessels and other structures can be discovered and preserved intact. Recently, Hauser has published Zenker's postmortem technic. Its main principle is to remove the organs in block, so that they can be examined from every side and incised before they are separated from each other. Mallory and Wright, *Pathological Technique*, Ed. 8, Philadelphia: W. B. Saunders Company, 1924.

THE DICK TEST

SOME SUGGESTIONS FOR ITS PRACTICAL APPLICATION *

WESLEY E. GATEWOOD, M.D.

IOWA CITY

When the skin test for susceptibility to scarlet fever was reported by G. F. and Gladys H. Dick,¹ it seemed to me that I might at once make some practical application of their discovery. I proposed first to determine the reliability of the test by employing it as a routine in all cases of scarlet fever admitted to the isolation hospital, both early and late in the course of the disease. I also hoped to test the susceptibility of those who had come in contact with scarlet fever in the general wards of the University Hospital. If the test proved reliable and an active immunity could be developed, it seemed that the test might be used to determine the susceptibility of various persons who are frequently exposed, determining which ones should be immunized. Further, as it is frequently necessary to isolate patients who are suddenly taken ill with erythema and other symptoms suggestive of scarlet fever, but in whom sufficient signs are lacking to make a definite diagnosis, it was hoped that this intradermal test might be helpful in arriving at an early diagnosis. This would economize hospital space, particularly at times when scarlet fever and diphtheria are unusually prevalent, since it would permit us in some instances to distinguish between scarlet fever and the noncontagious erythematous conditions, patients with the latter might be returned to the general hospital if they were found to be immune to scarlet fever. With mild scarlet fever it has often been necessary to wait for desquamation or other corroborative signs to prove the diagnosis.

When a group of nurses, students or patients has been exposed to scarlet fever, it would be of considerable value if, by such an intradermal test, those who are susceptible could be segregated and those who are not susceptible permitted to go free. If an antitoxin was available or if an active immunity could be developed without the disease actually being contracted, the Dick test might prove of value in recognizing those who are susceptible and in need of active or temporary passive immunity after exposure to scarlet fever. In other words, just as has since been suggested by various investigators of the scarlet fever problem, especially Dochez,² it seemed from the reports of the Dicks that the disease in its chief manifestations is like diphtheria and that the Dick test might be useful in the same manner as the Shick test.

Dr. George F. Dick provided a small supply of the diluted toxin, which was exhausted in the tests. An attempt was made to prepare our own toxin, cultures being taken of the throats of some of the persons with scarlet fever, and filtrates from the broth cultures being prepared. A moderately concentrated toxin was obtained, but as the detail of the method of the Dicks was not known, the solution was not concentrated sufficiently to eliminate the nonspecific protein reactions and still give strong specific scarlet-fever toxin reactions. Naturally, there are certain optimal cultural methods or conditions for the preparation of this toxin, just as with diphtheria toxin and tetanus toxin. This

* From the State University of Iowa College of Medicine.
1. Dick, G. F. and Dick, Gladys H. *A Skin Test for Susceptibility to Scarlet Fever* J. A. M. A. 82: 265 (Jan. 26) 1924.
2. Dochez, A. R. and Sherman, Lillian. *The Significance of Streptococcus Hemolyticus in Scarlet Fever* J. A. M. A. 82: 542 (Feb. 16) 1924.

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appeared. The cervical sympathetic nerve was also isolated and stimulated, resulting in a very prompt and satisfactory response—marked exophthalmos and extreme dilatation of the iris. The cause of the mydriasis is therefore, as in the case of the salivary gland, with the parasympathetic innervation, a greater or less degree of paralysis of the endings of the fibers of the third nerve. Whether there is a stage of stimulation, as with the chorda, we cannot say, but certainly that is not improbable.

These findings will explain the discrepancies in the various reports that have been cited above. If mydriasis is simply a widening of the pupil, then it is always present. True paralysis of the iris, with complete immobility of the pupil is probably usually not present in human botulism, but it is certainly possible. There is the same variation in degree of severity of action here as in the nerves elsewhere.

It is common to find lacrimation also, in cases in which the salivation is marked. In such dogs the skin around the eyes is found quite wet where the tears have flowed from the eye. On the other hand, if the poisoning is not acute, the nasal duct will doubtless care for the small increase in tear secretion.

Still later there is probably the same interference with the nervous mechanism of the lacrimal gland as with the secretory nerve to the salivary gland. Dogs that have been kept alive for twenty-four or forty-eight hours usually show some corneal changes, desquamation, and later, opacities, in spite of efforts to maintain a good condition of the eye by frequent washing with salt solution. Several factors are doubtless responsible for the corneal changes, among them may be mentioned the unwonted position of the animal, preventing the natural flow of tears over the eye, and the lack of winking reflex, but, in addition, close observation shows an unusually dry condition of the eye. There is evidence, therefore, for believing that there is a stage of stimulation followed by a greater or less degree of paralysis of the secretory nerve of the lacrimal gland.

VAGUS NERVE

As to the condition of the vagus, it is unnecessary to go into detail, as it was discussed in the earlier paper, where it was pointed out that varying degrees of loss of activity were encountered, even up to total paralysis. We have confirmed these statements during the last year. Whether the vagus first undergoes stimulation is harder to answer, but it is not improbable, as some authorities speak of the slow pulse seen early in the intoxication. Dickson⁹ says that the early authorities emphasized the fact that the pulse rate was extremely slow, and compared it with the pulse rate of digitalis poisoning. Also that Senekpiel had noted at the onset of the intoxication a pulse rate of from 50 to 60. These facts would seem to point to an early stimulation of the vagus but to show that later this period of stimulation passes off and is replaced by lessened vagus control, with a resulting acceleration of the heart. Fischer says that the period of slowing was not seen in any of his cases, but that later, through "vagus paralysis," an increase of pulse rate appeared, even to 150.

The evidence, then, is that the vagus, in common with the oculomotor and chorda tympani nerves, probably undergoes some stimulation before the stage of partial or complete paralysis appears.

COMMENT

In the physiologic studies reported in the earlier paper, and also given here, there would seem to be

found an adequate explanation for the symptoms of human or animal cases of botulism, but, in order to make this clear, it is necessary to go into the matter more closely and to try to correlate the findings and their interpretation with those reported by other workers. As to the cause of the symptoms of the intoxication, there are the two main views, one, that the action is on the central nervous system, either thrombosis of the cerebral vessels or an action on the motor nuclei, and the other, that the symptoms are peripheral in origin. It is not necessary to discuss the former view in detail, as it has been covered fully in many papers on the subject, including our own paper published in 1923. The fact that the views held by different workers are contradictory and are many times inadequate need not be dwelt on further.

For the peripheral point of attack, there is, as stated earlier, the paper by Schubel, but he, too, in addition to the peripheral action, describes extensive pathologic changes in the central nervous system of frogs. He concludes that it is possible that the toxin may exhibit a ferment-like action in the nerve cells and that, probably from the normal constituents of the nerve cells, poisonous split products are formed, which act on the motor endings.

It is hard to see why it is necessary to go to such lengths to explain the peripheral action of the toxin. There is no reason to believe that the toxin itself may not be responsible for these changes. The extensive degenerative changes described by Schubel as occurring in the spinal cord of frogs have not been found in warm blooded animals, and yet the curare-like action is found in them just as in the frogs, and it even appears in them much earlier than in the cold blooded animals.

In respect to the action of the toxin on the motor nerves, the points of view of Dickson and Shevsky and of ourselves would seem to be much alike, the main difference being merely one of interpretation. We agree that there is no organic destruction of tissue, but, according to the view held in this laboratory, there is a greater or less degree of paralysis of the motor nerve endings, while, according to Dickson and Shevsky, the endings (or myoneural junctions) show a marked susceptibility to fatigue. But Dickson is naturally constrained to inquire as to the cause of the fatigue. The effect is seen in frogs sitting quietly in tanks, in pigeons, guinea-pigs, cats and dogs confined in small cages and therefore not subject to the ordinary causes of fatigue. The paralysis will progress when the animals are under morphin, but its course is delayed in such cases as we have described.

It is stated against our view of a curare-like action that the effect is not "typical." This is perhaps a matter of words. According to our view, it is typical but not complete, just as the curare-like action of atropin in frogs is typical but not complete. But is it not true that the difference in the point of view is merely one of interpretation? Is not the "fatigue" of Dickson and Shevsky the incomplete curare action we have described? The curare action in its early stages is universally recognized as appearing with the same symptoms as physiologic fatigue. As Cushny¹⁰ says in his discussion of curare, "Here, perhaps better than elsewhere, it can be shown that the condition of paralysis produced by poisons is analogous to that termed by physiologists 'fatigue.'" And again he says "The paralysis of the nerve terminations by curare then is of the same nature as physiological fatigue." Also

¹⁰ Cushny. Textbook of Pharmacology and Experimental Therapeutics 1924 p 306

Schmiedeberg,¹⁷ in his discussion of the action of curare, says, "With incomplete paralysis of the nerve endings, the nervous apparatus fatigues with electrical stimulus more easily than in the normal condition." So also Sollmann¹⁸ says of the development of the curare paralysis that "fatigue sets in more readily than usual." These quotations illustrate sufficiently the generally accepted views of the resemblance of these two phenomena, realizing meanwhile that the fundamental causes underlying the two manifestations may be quite different. As has been suggested, in one case the connecting mechanism may be present, but prevented in some way from acting, while in fatigue the same mechanism is probably exhausted from overstimulation. We believe, therefore, that the botulinus "fatigue" is merely another name for botulinus "paralysis."

In the parasympathetic system, the difficulty of adjusting the two points of view is greater. On the one hand, it is said that the trouble is a block in the conducting nerve mechanism, which block can be broken down by a stronger electric current. According to our findings, the condition is essentially the same as with the motor nerve ends, viz, a greater or less degree of paralysis of the parasympathetic nerve endings. We have at times demonstrated the paralysis to be complete in the case of the vagus and to be almost complete in the motor oculi and chorda. In the case of these nerves, there has been no block, the response was prompt but not sustained, and increased strength of stimulus made matters worse by increasing the "fatigue" symptoms and perhaps turning a feebly active vagus into one fully paralyzed.

Whether the parasympathetics are stimulated before paralysis is harder to answer. Certainly it is the case with the chorda, possibly with the motor oculi, and probably with the vagus.

EXPERIMENTS ON THE TREATMENT OF BOTULISM IN DOGS

In the earlier paper from this laboratory, it was pointed out that since the cause of death in dogs was failure of the respiration due to peripheral causes and not to failure of the circulation, it might be possible to maintain life by artificial respiration until such time as the nerve ends had recovered sufficiently to carry on their normal function. With this object in view, we have been keeping dogs alive by artificial means, placing a cannula in the trachea as soon as the respiratory movements have ceased. The cannula was connected with bellows which were operated by an electric motor, the air being warmed by passing through a heating chamber. Within a few moments after respiration was started, the animal's color improved and it regained consciousness, as evidenced by its response when spoken to. On account of this fact, it was necessary to give the animal a narcotic to keep it quiet and to make it comfortable. For this purpose, we found that morphin gave best results, although we used paraldehyd at times. Care was taken to keep the animals in as good condition as possible while they were being kept alive. Fluid was supplied at regular intervals, usually 250 c.c. being given by stomach tube three or four times a day. At times, warmed Ringer's solution was injected intravenously or given into the peritoneal cavity. Some of the animals were given milk by stomach tube in place of water when they had been kept alive two or three days. We also gave dextrose dissolved in

the water, in these ways trying to keep up the animal's nutrition and avoid acidosis. The bladder was emptied twice daily and the animal's skin was kept clean and dry, the animal being raised from the table on a rack so as to allow the air to circulate under it. The room was kept quite warm, and in cool weather and at night the animals were kept covered and electric lights were placed above to maintain body heat.

Artificial Respiration.—In the first series of dogs, therefore, we tried the effect of maintaining life by artificial respiration alone, in order to give the nerve ends time to recover. In the length of time which we kept these dogs alive, namely, two or three days, we were not successful in attaining our ends. Perhaps it might be accomplished if the dose of toxin was not excessive, but in such experimental work, utilizing different lots of toxin, the dosage was bound to be uncertain. Failure was doubtless due to the fact that the toxin was retained in the blood for a long time. It is apparently destroyed or neutralized quite slowly. For instance, we withdrew 2 c.c. of blood from a dog three days after normal respiration had ceased and artificial respiration had been substituted. Injections of such blood into guinea-pigs always caused death within twenty-four hours. In this connection, it might be mentioned that Bruger¹ says that the injection into guinea-pigs of serum from patients, even three weeks after they have recovered from an acute attack, will call forth the disease in the guinea-pigs.

If the toxin is not destroyed or neutralized easily, it is not secreted in the urine in appreciable amounts, so far as we can judge from the intraperitoneal injection of urine of these dogs into guinea-pigs. We have repeatedly injected amounts as large as 5 c.c. and have never seen any symptoms of the botulism develop from it. These results are in sharp contradistinction to those of Schubel, working with frogs. He found that the urine of one frog was toxic to the second, and the urine from the second frog produced the disease in the third. These results would seem to indicate a difference between warm and cold blooded animals in their mode of disposing of the toxin.

Physostigmin.—Before leaving this phase of the work, we tried the effect of physostigmin on the dogs. In some of the animals which we kept alive, we injected the alkaloid in doses of from 0.3 to 0.5 mg. every four to six hours, but we never saw any favorable results from its use. In another dog, which, on account of a severe infection, we were going to kill, we tried the effect of the intravenous injection of larger amounts. Test of the sciatic nerve showed that its action was almost entirely gone, a slight movement in the foot muscles was all that resulted from the nerve stimulation. Physostigmin was now injected in 5 mg. doses, and the nerve tested after each injection. No increase in the strength of the movements of the foot could be noticed even after a total of 100 mg. had been given. It would not seem, then, that this alkaloid has any antagonistic action against the peripheral action of the toxin.

Antitoxin.—As the dogs were not disposing easily of the toxin in the blood, we next tried the effect of the use of antitoxin¹⁹ in addition to artificial respiration. In order to make the test more severe, we allowed the intoxication to proceed until respiration had ceased before the antitoxin was injected intravenously. The animals were then cared for as described above.

¹⁷ Schmiedeberg. *Grundriss der Pharmakologie* 1906 p. 104.
¹⁸ Sollmann. *Textbook of Pharmacology* 1922, p. 382.

¹⁹ Antitoxin was supplied by the Bureau of Animal Industry of the U. S. Dept. of Agriculture and by Prof. Robert Graham of the University of Illinois.

The results were in general much more encouraging than with artificial respiration alone. For instance, the blood became nontoxic. In several dogs from which blood was taken immediately after artificial respiration was commenced, the condition of the blood was such that the guinea-pigs to which it was given died within twelve hours, while blood drawn from six to twelve hours after the antitoxin had been given proved nontoxic. We tried to find out just when the blood became nontoxic by withdrawing it at two-hour intervals and injecting it into guinea-pigs, but did not have much success, as the reaction of the guinea-pigs was very irregular.

As is well known in outbreaks of botulism, the use of antitoxin in patients has not clearly demonstrated its value. It apparently will protect, but if not given until after the disease is clinically discernible, it has not proved efficient. In the light of our work, the reason for this failure is clearly to be seen. Even after the blood is rendered nontoxic by the use of antitoxin, the nerve ends must recover sufficiently to perform their normal function. If the paralyzing effect of the toxin has been carried to a considerable degree, death is bound to occur before the endings of the nerves in the respiratory muscles have recovered. It is in this interim, therefore, that artificial respiration should prove of value and probably life-saving. We have carried out this procedure in numerous dogs and, while it is true that we have never brought an animal through to complete recovery, on the other hand, neither have we lost a single animal from botulism. They have all died of the various accidents that have been described above. It is unnecessary to go into details of the clinical histories of the different animals, but there may well be given a short discussion of some of the later animals which showed our greatest degree of success.

We have frequently kept dogs alive for three days, and in some cases for practically four full days after their normal respiration has stopped. It must be remembered that it was thought necessary to keep them more or less under morphin all the time in order to relieve pain and discomfort, but the very fact that morphin was used would prevent the dog when it was released from getting up and moving about, to say nothing of the unwonted position which it had maintained for from ninety to 100 hours. To what extent the morphin would interfere with the restoration of respiration it is impossible to say. It is true that, in several cases in which the animals had been kept alive for forty-eight hours, more or less, and the artificial respiration was removed for a time, the animal would, after a minute or so, struggle somewhat, but apparently make no well sustained effort to breathe. In other dogs, following the removal of the artificial respiration, the animal started to breathe and apparently got along fairly well for a short time, but was not able to maintain itself permanently, and artificial means had to be resorted to again. In one of the cases in which the greatest success was attained, the animal had been kept in good condition for almost four full days. When allowed to do so, it started to breathe normally, except for the fact that the movements were labored. The animal was released, it turned over, but naturally was not able to stand. It held its head up well and even managed to get a muzzle off which had been placed on it. The breathing still being labored, artificial means were again instituted, the belief being that the nerve endings had not completely recovered. In this we were doubtless wrong, as the animal was found dead half an

hour later. An examination showed that the tracheal tube was entirely closed except for a pin point opening, and the animal had died of suffocation in spite of the fact that the tube had been cleaned an hour or two earlier. Such a result, in spite of its unfortunate outcome, was indeed practically a success. The labored respiration was due to tracheal obstruction and not to paralyzed nerve ends, and it can hardly be doubted that, had the patient been a human being capable of cooperation instead of a dog which had to be restrained, the treatment would have been a complete success. The time element is of utmost importance, but how long it takes for the ends to recover no one can say—probably not as long as we have given our dogs. With a human being, it would be possible with a word to test the patient's capacity to breathe, but this is not the case with dogs. With them in such a condition, it is the opposite of cooperation that is encountered.

From one dog, we did get some light as to the time of recovery of the nerve endings after the injection of antitoxin. This animal had shown early loss of action of the diaphragm, and later very complete muscular relaxation with very little attempt at movement. After artificial respiration had been carried on for two days, it was decided that it would not be advisable to try to continue the experiment, as the animal showed a very marked infection in its head. Respiration was stopped, and as soon as the heart had ceased, an examination was made as to the condition of some of the peripheral nerves. The sciatic showed only very slight activity, a slight movement in the leg and just a perceptible movement in the toes. There was still, therefore, almost total paralysis. With the phrenics it was otherwise. Stimulation of these nerves brought out a prompt and fairly satisfactory contraction of the diaphragm, but the contraction was not well sustained, as slow relaxation would appear even with continued stimulation. Repeated stimuli were given, but the response finally lessened and, after a few more stimuli, the nerves became inactive. In this animal, there was apparently a very considerable degree of recovery of the phrenic endings, but as to how effective they would have been in supplying the needs of respiration, it is impossible to say.

In another series of experiments, we varied the treatment by giving the antitoxin earlier in the course of the intoxication. As soon as the respiration became so seriously involved that it was apparent that death was a matter of a very few hours, we injected 10 c.c. of antitoxin intravenously. Artificial respiration was given as needed, and in every other way the dogs were treated as described above. We shall give the details of only one experiment, namely, that of the dog which showed the greatest degree of improvement under this modified form of treatment. The respiration showing marked involvement twenty-eight hours after the toxin had been injected, the antitoxin was given, and late that night artificial respiration was instituted. The next morning the animal was found to be making some respiratory movements, and in the afternoon the artificial respiration was stopped. As normal breathing seemed adequate, the animal was released. As a result of the morphin and the unnatural position its movements were clumsy, but in spite of that it was able to walk fairly satisfactorily about the laboratory. As the respiration for some hours had been found to be adequate, the tracheal cannula was removed and the wound in the neck closed. In order to keep the animal quiet and comfortable, 30 mg. of morphin was given at 5 p. m., and it was placed in a cage. At 7 p. m. it

was found breathing normally, but at 9 p. m. it was dead. It is impossible to say what killed it after it had breathed naturally for seven hours, and it can only be suggested that it was the morphin. While the dose was not large, it might have been too great for a dog in so weakened a condition. It was observed that the animal was tremendously prostrated by the drug, and this is the most reasonable cause to assign to its death. It is significant, however, that in this dog which followed, so far as treatment is concerned, a human case, the greatest degree of success was reached.

METHODS OF PROLONGING LIFE

An interesting paper concerned with the treatment of botulinus intoxication is contributed by Bronfenbrenner and Weiss²⁰. They report that they were able to prolong the life of guinea-pigs which had been injected with toxin by etherization, by the administration of phenobarbital (luminal) sodium and by morphin given subcutaneously. This prolongation of life was sufficient in certain cases to make the use of antitoxin effective.

ACTION ON THE CENTRAL NERVOUS SYSTEM

Finally, we want to make it clear that, in putting forward the peripheral nervous system as a seat of action of the botulinus toxin, we do not wish to be understood as denying the possibility of an action on the central nervous system. We do feel, however, that up to this time no such evidence has been presented that will stand a critical investigation. Some of the difficulties connected with accepting the various views that have been put forth have been discussed earlier.

In the course of our experiments we have removed the brains of many of the animals that have died from the effect of the toxin, and they have been examined by Prof. A. M. Barrett of the State Psychopathic Hospital, who will make a fuller report on them at a later time. For the present purpose, a brief report may be given. These brains were all removed immediately after the death of the animal and were placed in 96 per cent alcohol, which was changed every few days until the brains were well hardened.

Dr. Barrett reports that the earlier brains which he examined, which were removed from animals immediately after the animal had stopped breathing, and in which no effort was made to prolong life, showed absolutely no change in the cells of the motor nuclei or in the cells of the cortex.

In animals that had been kept alive for a time by artificial respiration, there was also no change in the motor nuclei, but there was a change in the cortical cells, which in certain cases showed rather profound disintegration. These cortical changes, Dr. Barrett considers, are not in any way characteristic of botulism, but are similar in character to those seen in many other types of intoxication. The important matter is that, in all cases, the cells of the motor nuclei are normal in appearance and that, in the earlier brains which would show an uncomplicated botulinus picture, the results are negative. Only in the later cases, in which complications arose, such as marked infections, were there the changes in the cortical cells. These changes coincided with the clinical symptoms of the dogs which, after a period of two or three days of artificial respiration, showed symptoms of unconsciousness and a profound intoxication very different from the symptoms of botulism.

CONCLUSION

All the essential symptoms of botulism can be explained by an incomplete curare-like paralysis of the endings of the motor nerves to the voluntary muscles, including the diaphragm, and by a more or less complete paralysis of the parasympathetic nerve endings. The paralysis of the parasympathetics is preceded by a stage of stimulation.

The administration of morphin will delay the course of the intoxication, allowing a longer time for antitoxin to exert its effects. Additional time may be secured, if necessary, by the use of artificial respiration. It is very important that antitoxin be administered as early in the course of the disease as is possible.

ABSTRACT OF DISCUSSION

DR. J. C. GEIGER, Chicago. The problem of botulism has necessarily two aspects. The part of the problem that is of interest to public health agencies is now well understood. The clinical part, however, has many features about which our knowledge is yet obscure or very meager. Botulism is a rare disease in the United States. The outbreaks that have occurred have averaged about fifteen each year. One hundred and thirty-four outbreaks have been reported, with 458 cases and 309 deaths, a mortality of 65 per cent plus. Ninety-eight per cent of the outbreaks occur in western states whose soils show considerable contamination with the spore of *B. botulinus*, or from products canned in the West. Any method of preservation of food in western states should always contemplate the use of the pressure apparatus. I have made numerous tests to determine the presence of toxin in the blood serum in cases of botulism, both in the early and in later stages of the disease. All have been negative. The isolation of the spore from the stools or agglutination reactions with blood serum have yielded the best results in the laboratory tests performed. The observation in this paper that physostigmin has no antagonistic action against the peripheral action of the toxin in dogs, and, therefore, is of probably no curative effect if administered in human cases of botulism, was interesting in the light of the author's previous observations and announcements. As there seems to be some fixation of the toxin in the body and probably no increase after the poisonous food has been ingested, early administration of the antitoxin is desirable. This is very difficult of application, as usually the disease is not recognized within forty-eight hours after the food has been consumed, and this is not unlikely to be the time limit of the efficiency of the antitoxin. In this connection, it is well to mention that Type A is by far the most predominant type demonstrable as causing the outbreaks in the United States. Type B is exceedingly rare as a cause of the disease in man, and an outbreak from the so-called Type C is, so far, unknown in the United States.

PROF. A. J. CARLSON, Chicago. In the course of our studies we have observed very many rats, guinea-pigs, rabbits and six dogs dying from B toxin. I am quite familiar with the symptoms of curare poisoning in mammals. As Dr. Edmunds has pointed out, in animals the curare acts very quickly, and there is a corresponding quick recovery if artificial respiration is carried out. The dog is not a very good subject for this kind of work, being extremely resistant to B toxin. We had to give dogs by mouth from 50 to 80 c.c. of a toxin fatal to mice in a dilution of 1:100,000. We have had dogs recover from a dose of 80 c.c. B toxin by mouth. I feel certain that B toxin in mammals injures many organs besides the motor nerve endings. I should think that Dr. Edmunds' therapy, even if correct in theory (peripheral paralysis), would be quite uncertain and possibly dangerous in practice for the reason that one probably would have to perform tracheotomy on the patient. We could not carry on artificial respiration as we do in the dog. This would probably bring on pneumonia. We frequently see pneumonia in a B poisoned mammal that lingers for a week or ten days before it dies. When we have given

this disease to monkeys and carry them through a fatal dose over from three to five days with artificial respiration, then we would have some real basis for this type of human therapy. Or one should do this in guinea-pigs or rabbits—they are closer to man so far as sensitiveness to B toxin is concerned.

DR C W EDMUNDS, Ann Arbor, Mich. I took a number of these animals that died of the toxin, removed the brains, and sent them to the psychopathic hospital, where they were examined very carefully by Dr Barrett. He was unable to demonstrate in any of the motor nuclei the slightest change from normal. In the animals kept alive for three or four days, there was a change in the cortical cells. The doses of toxin were never given by mouth, we always injected them intraperitoneally—about 3 cc—if the toxin was strong, otherwise more. It was fatal in every case. By injection into the peritoneal cavity one can get the symptoms of intoxication within twelve hours, and we always worked with doses that would surely prove fatal. In man it would certainly be necessary to perform a tracheotomy in order to carry on artificial respiration for any length of time. I do not believe that there is an apparatus on the market today which would be suitable for this purpose without tracheotomy. As a matter of fact this method of carrying on artificial respiration has already been tried successfully in a case of diphtheria that occurred in St. Louis. In this case, when the diphtheritic paralysis appeared a tracheal tube was inserted and respiration maintained by artificial means for three days, when the child recovered.

REGENERATION OF THE PANCREAS FROM THE PANCREATIC DUCT*

N F FISHER, PH D

Assistant Professor of Physiology Baylor University College of Medicine
DALLAS, TEXAS

In my use of the word regeneration, I shall mean the growth of new pancreas tissue from the pancreas duct remnants. These experiments were suggested by the regeneration of pancreas tissue from the pancreatic duct stump in totally depancreatized dogs kept alive with insulin. Suffice it to say here that more than 0.5 gm of normal pancreas tissue regenerated in the course of eight months, at the end of which time the animal was killed. The finding seemed of sufficient importance to test (a) the capacity of the duct to regenerate new pancreas tissue in situ and (b) when transferred to other parts of the body.

The method used was as follows. Pups about 8 weeks of age were selected, the assumption being that young duct tissue possessed a greater capacity for regeneration of pancreas tissue. All the pancreas in each dog was removed except a portion of the tail. Special care was exercised in removing every bit of the organ from the region of the main duct. In some cases, the duct was left intact, while in others it was doubly ligated as far as 2 inches from the duodenum and cut between the ligatures.

For the transplantation experiments, pieces of pancreatic duct about one-fourth inch in length were taken from pups several days old and transferred to hosts 10 weeks of age. The transplanted tissue was allowed to remain from forty to sixty days and then removed and submitted to microscopic examination.

REPORT OF EXPERIMENTS

EXPERIMENT 1—Three fourths of the head portion of the pancreas was removed in a male dog, aged 10 weeks. December 4 and all apparent pancreas tissue was carefully separated

from the main duct for a distance of 2 inches from the duodenum. The duct was doubly ligated and cut between the ligatures. January 19, forty-six days after the operation, the pup was killed.

At necropsy it was found that the old pancreatic duct stump had degenerated. A new duct grew from the base of the old duct to the pancreas 2 inches distant, and established functional union.

EXPERIMENTS 2 and 3—Three fourths of the pancreas was removed in two male dogs of the same litter, aged 8 weeks, November 8. The main duct was isolated, ligated and cut as in the case of Dog 1. December 2, Dog 2 was killed by other dogs, twenty-four days after the operation. Dog 3 was chloroformed, January 18, seventy-two days after the operation.

At necropsy it was found that the proximal and peripheral portions of the main duct in Dog 3 had suffered no apparent change. From the peripheral portion of the main duct, several new branches had formed. One branch grew from the peripheral portion of the duct to the pyloric end of the stomach, about 4 inches distant. Injection with methylene blue, and histologic sections, proved that physiologic union had been established. From the proximal portion of the main duct, several ducts grew to the pancreas. From the base of the main duct two new ducts developed, one duct joined the pancreas, 2 inches away, the other duct extended about 1 inch in the opposite direction. On the end of the latter duct was a piece of regenerated normal pancreas tissue 5 mm in diameter.

Necropsy on Dog 2 showed that the main duct, which had been separated from the pancreas, had suffered no apparent change. From the base of the duct stump, a new duct formed connection with the pancreas, 2 inches away.

EXPERIMENTS 4 and 5—March 14, three fourths of the pancreas of two female pups of the same litter, aged about 8 weeks, was removed. No pancreas tissue was left within 2 inches of the base of the duct. The main duct was left intact. Both pups were killed, May 14, two months after the operation.

Necropsy on Dog 4 showed that from the base of the main duct there had developed a new duct about one-fourth inch long, supporting regenerated pancreas tissue. The fresh tissue weighed 55 mg, and consisted of islet and acinous tissue.

In Dog 5 there were no signs of new ducts being formed, or any indications of regeneration of pancreas tissue from the duct stump.

EXPERIMENT 6—The entire pancreas was removed in a female dog aged about 1 year, weighing 32 pounds (14.5 kg), except a small piece of the body of the gland, which was purposely left behind. The pancreatic ducts were ligated with linen thread very close to the duodenum, and special precautions were taken to remove every apparent trace of pancreas tissue from the vicinity of the ducts. Two days later, the dog had fully recovered from the operation. For the next two months, daily urine examinations were made. The amount of sugar present varied between 0.1 and 0.3 per cent. During the next two months, the dog was allowed to run at large. No change was noted in the animal's condition. The animal was killed 138 days after the operation.

At necropsy, the urine in the bladder contained 1.5 per cent of sugar. The piece of pancreas left at the operation had increased to 311 mg. On the duct, was the linen thread marking the place of ligation. The main duct stump beneath the serosa of the duodenum had regenerated 934 mg of pancreas tissue. The weight of the newly formed duct was 125 mg.

EXPERIMENTS 7 and 8—One-fourth inch of pancreatic duct was transplanted subcutaneously, December 6, beneath the abdomen of two female pups of the same litter, aged about 8 weeks. The duct tissue was taken from pups, aged 2 weeks. The grafts were recovered, February 1, fifty-six days later. Both pieces had almost doubled in size.

EXPERIMENT 9—A piece of pancreatic duct one-half inch long was transplanted subcutaneously beneath the abdomen of a male pup aged 10 weeks, January 7. The duct segment was taken from a pup, aged 4 days. The graft was recovered, February 16, forty days later. There was a marked proliferation of ducts from the transplanted tissue.

* Read before the Section on Pathology and Physiology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

COMMENTS

From the foregoing experiments, it is very evident that there is a great tendency toward the proliferation of new duct tissue. In almost every case, when the pancreas was removed from the base of the duct, new ducts were formed to establish functional union between the pancreas and the duodenum. The difficulty of occluding the main duct by mere ligation has been mentioned by many workers. Clark described the formation of a new opening into the intestine for the pancreatic secretion, in the rabbit, after the duct had been doubly ligated and cut between the ligatures. The ability to reestablish connection between the intestine and pancreas is especially emphasized in the case of Dog 3, in which a new duct grew from the peripheral end of the main duct to the stomach 4 inches distant. When methylene blue was injected into the duct it poured into the stomach, proving that functional union had been effected. In the cases in which new ducts grew from the base of the old duct and joined the pancreas we could be certain only that new duct tissue was formed, but could not prove that pancreas tissue had regenerated. This formation of new ducts confirms and extends the results of previous workers with regard to the capacity of the pancreatic duct to form new duct tissue.

It was only in the cases of Dogs 3 and 4 that the regeneration of new pancreas tissue was clearly demonstrated. In these two cases, a new duct grew from the base of the old duct, away from the pancreas remnant, and at its end supported normal pancreas tissue. The regenerated pancreas was more than 2 inches removed from the pancreas tissue left at the time of operation. It should be mentioned that regeneration of pancreas tissue does not occur in every instance when the pancreas is separated from the main duct. In one case, the duct was considerably thickened, which indicated trauma to the duct. In another case, more pancreas regenerated from the duct from which all pancreas had been previously removed than resulted by hypertrophy from a piece left at the other duct. This suggests that regeneration may be more rapid than hypertrophy when proper conditions are provided. However, in spite of the regeneration of pancreas tissue in Dog 6, there was a marked lowering of the carbohydrate tolerance. The pancreas tissue in the latter case has not been examined microscopically. In the other cases mentioned above, Bensley was satisfied that the tissue was regenerated pancreas.

CONCLUSIONS

1 When the pancreatic ducts are ligated and cut in the dog, there is a marked tendency toward the formation of new ducts to establish functional union.

2 The separation of the pancreas from the base of the main duct leads to the regeneration of new pancreas tissue.

3 Pancreatic duct tissue transplanted to other parts of the body of the same animal or other animals of the same species will proliferate new duct tissue.

ABSTRACT OF DISCUSSION

PROF. A. J. CARLSON, Chicago. Dr. Fisher started this problem two years ago at the University of Chicago. We secured regeneration of pancreas tissue from the stump of the pancreatic ducts in two pancreatectomized dogs kept for a long time on insulin. The problem is that of the ultimate control of diabetes. We have evidence that insulin, in the absence of the pancreas, will not keep the animal alive indefinitely. But, in the absence of the pancreas, there may still be a chance

for a regeneration of the pancreas from a transplanted duct. We have succeeded in getting transplanted ducts to grow and live, but the transplanted duct has so far not regenerated the pancreas.

DR. H. R. WAHL, Rosedale, Kan. What was the relation of acini to the regeneration of the islands of Langerhans?

DR. NELSON F. FISHER, Dallas, Texas. The regeneration in these three cases showed about an equal amount of acinous tissue to island tissue—possibly more acinous tissue. In these cases, one could not distinguish the acinous tissue from the normal pancreas.

PRIMARY CHANCRE OF THE PALPEBRAL CONJUNCTIVA*

REPORT OF CASE

W. P. LING, M.D.

PEKING, CHINA

In spite of the great prevalence of syphilis in China, primary chancre of the conjunctiva is not commonly seen. The case reported here is of especial interest for two reasons. 1 It is a double infection in which the tarsal conjunctiva and the skin of the forehead are simultaneously infected. 2 The diagnosis of the case is not an easy one.

REPORT OF CASE

History—A man, aged 34, came to the eye clinic of the Peking Union Medical College for treatment, Sept. 12, 1923. The patient remembered having had a lesion on the penis in 1914 which disappeared without local treatment. The patient doubted the cause of the lesion, because no examination was at that time made. Shortly after the appearance of the lesion, he received two injections of arsphenamin. He did not develop any symptoms of secondary syphilis.

About ten days prior to his coming to our clinic, he noticed a small 'pimple' on his forehead, a short distance above the left eyebrow on the temporal side. He attributed this to a mosquito bite. Two or three days after the appearance of the "pimple," he felt some discomfort in the left upper lid, as if there were a grain of sand under the lid. He consulted his physician, who on examination discovered a roundish elevation with a sharply defined margin, situated at the junction of the inner and middle third of the upper tarsal conjunctiva. The physician treated the lesion with local applications containing silver, mercury and copper. The treatment, however, was ineffective. The patient was then sent to our clinic. The blood Wassermann reaction, as reported by his physician, was negative. The patient stated that he had not been exposed to venereal infection.

Examination—The upper lid of the left eye was moderately swollen and red, causing a narrowing of the palpebral fissure. There was a definite, indolent, localized swelling at the junction of the middle and inner third in the midhorizontal line. When the lid was everted, a disk-shaped ulcer with slightly elevated margin was seen at the upper border of the tarsus, about 3 mm. in diameter. It was firmly adherent to the underlying tarsus. The ulcer was brownish red and indurated. The superior fornix and the adjacent bulbar conjunctiva were only slightly injected. On the forehead, about 2 cm. above the left eyebrow, was a sharply defined ulcer which, by its dark color and indolent appearance, suggested syphilitic efflorescence. It was about the size of a ten cent silver coin.

The blood Wassermann test made by our laboratory was negative. Dark field examination and culture also were negative.

Treatment and Course—September 20 and October 4, the patient received 0.45 and 0.75 gm. of neo-arsphenamin given by his own physician. October 9, the Wassermann reaction was said to be positive. He received eight intravenous injections of neo-arsphenamin (0.75 gm.) and nine intramuscular injections of mercuric salicylate (0.06 gm.) before the second Wassermann test was made, December 7. This Wassermann

* From the department of ophthalmology of the Peking Union Medical College.

reaction was said to be negative. The lesions on the forehead and the conjunctiva were reported healed after the first two injections, and were completely healed after the fourth injection.

Final examination, Jan. 28, 1924, revealed the lesion completely healed. Only a slight superficial scar and a shallow, notchlike defect, were left on the upper border of the tarsus.

COMMENT

The diagnosis of the case was rather difficult for the following reasons:

1 The patient stated that he had not been exposed. In spite of this, syphilis was suspected, not so much because of the lesion on the conjunctiva, but on account of the characteristic ulcer on the forehead.

2 The patient gave a history of previous syphilitic infection in 1914, therefore, it was thought at first that it might be a gumma. Such a diagnosis is not probable on account of the negative Wassermann reaction. Our final conclusion was that the first sore on the penis (1914) was not syphilitic. If it was syphilitic, the syphilis must have been cured. The fact that no spirochetes were found in the lesions does not contradict our diagnosis of primary chancre, because both sores were treated with antiseptics before the dark field examination was made.

However, the subsequent course of the lesion, namely, the rapid healing of the ulcer under the influence of neo-arsphenamin and mercury, helped us to arrive at a definite diagnosis of primary chancre. Furthermore, the fact that the Wassermann reaction was reported by the patient's physician to be positive one month after the appearance of the sores, and that it became negative after two months of vigorous treatment, further confirmed our diagnosis.

According to Mavey,¹ who compiled the literature of eighty-two cases of primary syphilitic lesions of the eye, the occurrence of the lesions in the various parts of the eye was recorded in the order given in the accompanying table.

Order of Occurrence of Lesions

	Number of Cases
1 Conjunctiva	
Upper palpebral	5
Superior fornix	3
Lower palpebral	3
Inferior fornix	3
Location indefinite	13
Plica and tarsus	1
Bulbar conjunctiva	21
2 Lid	
Upper	1
Lower	4
Ciliary border	2
Location indefinite	27
3 Canthus	4
4 Location unknown	2

From these statistics, it is evident that chancre of the conjunctiva is more common than chancre of other parts of the eye. This is difficult to explain in view of the fact that the conjunctiva is well protected from external contact. We believe that the saliva of persons affected with mucous patches may possibly get into the eye during such acts as kissing and the like.

Increase of Automobile Deaths Greater than Increase of Automobiles.—The increase in the number of automobiles in use as against the increased number of fatalities is shown by the data secured by the Ohio Public Health Association of Columbus, in a campaign directed against this appalling waste of life. These figures show a percentage increase in automobile fatalities (29) in 1923 over 1922 considerably larger than the percentage increase (24) in the number of automobiles.—*Pub. Health Rep.* 39 755 (April 11) 1924.

¹ Mavey, E. E. *Am. J. Ophth.* 13 (Jan.) 1918.

Special Article

THE THERAPEUTIC USE OF DIGITALIS

WITH ESPECIAL REFERENCE TO ITS INTRAVENOUS INJECTION *

G. CANBY ROBINSON, M.D.

NASHVILLE, TENN.

PAUL D. WHITE, M.D.

BOSTON

CARY EGGLESTON, M.D.

AND

ROBERT A. HATCHER, M.D.

NEW YORK

Statement of Council on Pharmacy and Chemistry

The Council has long held that digitalis effects can be obtained satisfactorily in most instances by the oral administration of digitalis itself, the tincture or the infusion, and that the intravenous administration of digitalis preparations is rarely necessary. However, investigation indicates that digitalis preparations are administered intravenously far more frequently than seems to be demanded.

Because of the importance of digitalis therapy, the Council decided to appoint a committee composed of men who have made a study of questions concerning the administration of digitalis, and to request this committee to prepare a report for publication which would set forth concisely the limitations of digitalis therapy and the methods of obtaining digitalis effects.

The report of Drs. G. Canby Robinson, Paul D. White, Cary Eggleston and Robert A. Hatcher, which follows, was prepared at the request of the Council. The Council has considered this report and has endorsed its publication.

W. A. PUCKNER, Secretary

Every physician encounters difficulties in the treatment of cardiac disease, and occasionally he is puzzled by his failure to secure the results described by others. Advantage has been taken of the difficulties attending the therapeutic use of the digitalis bodies to exploit their intravenous administration, and many advantages are claimed for this method which it does not possess. It is not the purpose of this committee to attempt to dictate, but the principles involved in the use of the digitalis bodies will be stated.

The beneficial effects exerted by the digitalis bodies on patients suffering with heart disease result from the changes these drugs produce in the different functions of the circulatory system. The alteration in the functional activity of the heart is in part brought about apparently by their direct action on the contractile and conducting structures of the heart itself, and in part by their indirect action on the nervous structures that control it. The action of the digitalis bodies is not, therefore, altogether simple, even on the normal heart. For an understanding of their effects on the damaged, abnormally functioning heart, careful analysis is necessary, not alone of the several actions these drugs may exert, but also of the various disorders of cardiac function that may lead to heart failure.

In practice, it is often impossible to classify sharply cases of heart failure on the basis of the derangements of function underlying their production. Nearly every case results from a combination of causes, and these must be evaluated relatively to one another in any

* The essential literature relating to digitalis was reviewed recently by G. Canby Robinson (*Medicine* 1:137 [May] 1922) and further references are omitted here.

attempt to reach a clear understanding by which treatment may be intelligently instituted.

Indeed, the analysis of the disturbances of cardiac function has another important aspect. There are certain disorders of the heart which may lead to cardiac failure and which are only exaggerated by the administration of a drug of the digitalis group. In such conditions, these drugs are definitely harmful and even dangerous. Cases of partial heart-block and a form of cardiac derangement that occurs in diphtheria may be cited as examples. The careful analysis of the causes of heart failure is especially necessary if one of the digitalis bodies is to be administered intravenously.

It is well, therefore, to protest at the outset of this report against the intravenous use of the digitalis bodies as an emergency measure in cases of sudden heart failure when a careful study of the heart has not been possible. Sudden cardiac failure not infrequently results from a cause, such as coronary occlusion, which may affect the ventricles in such a way as to render them liable to go into a state of fibrillation, which is fatal. At such a time a full dose of one of the digitalis bodies injected intravenously may bring about this unfortunate accident, just as these drugs almost invariably induce ventricular fibrillation when given in fatal doses to mammals experimentally.

Auricular fibrillation is the one condition in which there is general agreement that the digitalis bodies are indicated. This condition is characterized clinically by a totally irregular action of the heart, with a marked acceleration of the ventricular rate and with numerous contractions that fail to produce a palpable pulsation in the radial artery. The efficiency of the heart is greatly impaired by the rapid, irregular ventricular action, and it is because the digitalis bodies are capable of slowing and steadying the ventricular action in a remarkable manner in auricular fibrillation that they have gained much of their reputation in the treatment of cardiac disease. They are, generally speaking, more effective in restoring compensation in young or middle aged patients, in whom auricular fibrillation follows the so-called rheumatic infection, than in older patients in whom arterial sclerosis or chronic myocarditis of syphilitic or of undetermined origin may be responsible for the disordered action of the heart.

Patients with severe symptoms of cardiac failure produced by the rapid and irregular ventricular action of auricular fibrillation are often in urgent need of digitalis, and the question as to the best mode of administration is presented. Rapidity of action may predominate over all other considerations, and may appear to be a definite indication for the intravenous use of the digitalis bodies. In such cases, however, the myocardium may be severely damaged, and its condition may be such that a large intravenous dose of one of the digitalis bodies would be especially prone to set up ventricular fibrillation. There is little danger of this with the oral administration of ordinary doses. Moreover, recent studies have shown that when the major portion of the full calculated amount of digitalis necessary to produce a maximal therapeutic result is given by mouth in a single dose, the drug is often effective in two hours, although in some instances five or six hours is required.

When strophanthin is given intravenously in safe divided doses, only a slight gain may be expected as regards speed of action, although when large doses, which cannot be considered safe, are given the action may be observed in about twenty minutes.

In other disturbances of cardiac mechanism, the digitalis bodies are by no means so clearly indicated as in auricular fibrillation. Members of the group, especially digitalis itself, have proved useful in cases of auricular flutter, the condition in which a so-called "circus movement" becomes established in the auricles, causing them to contract at a rate of about 300 a minute, while the ventricles respond to every second, third, or even fourth auricular contraction. Digitalis affects the heart in these cases in such a way as to favor a change to auricular fibrillation, which is then often replaced by the normal sinus rhythm. With the introduction of quinidin, however, probably a better drug for restoring the normal rhythm has been found. Digitalis is indicated in auricular flutter for another reason. When the ventricular rate is so rapid as to impair the cardiac efficiency, digitalis may bring about ventricular slowing by its power to depress the conducting system between the auricles and ventricles. In this way a degree of partial heart-block may be produced, which allows the ventricles to respond to a smaller proportion of the auricular contractions, and so assume a slower rate. It may be said, therefore, that the digitalis bodies are indicated in auricular flutter when the ventricular rate is excessive, both from the fact that these drugs tend to cause a disappearance of the abnormal auricular activity and because they bring about an improvement in cardiac efficiency by ventricular slowing.

Premature contractions, or extrasystoles, have long been known as one of the early signs of excessive digitalis medication. In spite of this fact, their existence in a patient who has not recently received digitalis should not be taken as a contraindication for the use of these drugs. Under some circumstances, premature beats disappear under digitalis medication. The question of the exact relation of digitalis to extrasystoles (premature beats) is still under discussion. In most cases, extrasystoles are an incident in, rather than a cause of, cardiac decompensation, and their presence may be neglected in considering the probable efficiency of digitalis therapy.

The digitalis bodies have proved of no constant value in paroxysmal tachycardia, although in prolonged attacks, in which evidence of myocardial failure may supervene, digitalis should be used with the hope of improving the cardiac efficiency even without influencing the excessive cardiac rate.

In cases of heart-block, special care and judgment are needed in the use of the digitalis bodies. Depression of conduction is one of the most definite effects that they produce. Therefore, in partial heart-block when further interference with the passage of cardiac impulses from auricles to ventricles may be injurious, the digitalis bodies are contraindicated. In complete heart-block, however, when the ventricular contractions are quite independent of auricular action, the effect of these drugs on the conducting mechanism may be disregarded. There is good evidence that the digitalis bodies, especially strophanthus, may not only seem to improve the efficiency of the ventricles, but also to quicken their rate. Although complete heart-block is not a contraindication for digitalis, the drug should be withheld in cases of temporary heart-block when a return of the normal beat is anticipated. It is under such circumstances that especially sound judgment is needed, and each case represents a problem for study in regard to the use of digitalis and its allies, as all these drugs, with the possible exception of helle-

borein, tend to prevent the recovery of the conducting system and the establishment of the normal cardiac mechanism.

Consideration must now be given to the indications for digitalis bodies in that form of heart disease in which the power of the heart muscle is apparently impaired, and in which no other cause can be discovered to account for the failure of the heart to maintain an adequate circulation. Here it is more difficult to analyze the indications for these drugs, and more dependence must be placed on that uncertain guide, clinical experience. However, competent observers have borne witness to the fact that in myocardial insufficiency, benefit is often derived from the use of digitalis and its allies, though there is no abnormality of rhythm. Improvement in the efficiency of the heart is often seen without any change in rate, and no such change usually occurs in hearts that have the normal cardiac mechanism.

It may be said, without discussing the various theories of their action on the abnormal myocardium, that the fact that these drugs act favorably in cases of myocardial insufficiency gives them a wide application in all forms of heart disease, and warrants their trial whenever a definite contraindication does not exist. For this reason, the use of the digitalis bodies is justified when any symptom or group of symptoms is present which can be accounted for by no other cause than myocardial insufficiency. Dyspnea, chest pain on exertion, orthopnea, edema, cyanosis, congestion of the lung bases, liver or kidneys, with hydrothorax especially of the right pleural cavity alone may be taken as indications for the use of the digitalis bodies, especially when there is evidence of cardiac dilatation, a departure from the usual level of blood pressure and alteration in the character of the heart sounds.

A recent study has shown that definite benefit may be derived from the use of large oral doses of digitalis by patients having so-called chronic myocarditis who show signs of cardiac failure. The drug is especially effective in patients with edema who show no signs of aortic insufficiency. In such cases the results—improvement in symptoms, diuresis, loss of edema and decrease in the size of the liver—may be as impressive as those that occur in patients with auricular fibrillation. In cases with normal rhythm, however, the digitalis bodies are to be used with hope rather than assurance. Each case should be studied with care, as some of these patients are unusually susceptible to the toxic effects of these drugs. It is for this reason that these patients especially should receive digitalis by oral administration rather than by intravenous injection.

The indications for the drugs of the digitalis group are not altered by the presence of a lesion of one or several of the heart valves, except so far as such lesions make it especially desirable to have the myocardium at its best. However, perhaps less is to be expected of these drugs in the presence of aortic insufficiency than when this lesion is absent.

The presence of pulsus alternans, a phenomenon consisting of alternating relatively strong and weak pulsations of the radial pulse, is a sign of grave myocardial weakness. As it has been observed following large doses of digitalis, its presence has been considered by some to be a contraindication for the use of the drug. Observations on the effect of digitalis in a large series of patients showing this phenomenon have, however, disproved that idea.

THE PROPER METHODS OF ADMINISTRATION

Having discussed the conditions in which digitalis bodies are useful and the therapeutic effects which they induce, we will consider the best means of administering them. Obviously, this involves the question of dosage, which, in turn, is based on the activity of the drug, the readiness with which it enters the circulation, and the duration of its action.

Activity—The United States Pharmacopeia gives directions for standardizing digitalis by means of the frog test. It is not an exact measure of therapeutic activity, but it is the most convenient method available. Other methods of standardization have been employed for special investigations.

Absorbability—There is an extraordinary difference in the absorbability of the different digitalis bodies, and since they all have very nearly the same kind of action on the heart, it follows that only those which are absorbed fairly uniformly should be administered orally. Squill, apocynum, convallaria, strophanthus and strophanthin are absorbed poorly from the gastro-intestinal tract, but strophanthin may be injected intravenously or intramuscularly when prompt action is imperative. Digitalis is not absorbed from the gastro-intestinal tract with absolute uniformity, but the most active principle—digitoxin or a substance resembling it—is absorbed with a greater approach to uniformity than is any other known digitalis body. The absorption of digitalis is usually nearly complete within two hours after its oral or rectal administration.

Mode of Administration—When little more than a full therapeutic dose has been absorbed, nausea is induced, and this automatically delays further absorption by closing the pylorus, and vomiting or purgation commonly removes any excess from the gastro-intestinal tract if much more than the full therapeutic dose has been administered, and fatal poisoning is rare after the oral administration of digitalis itself.

Prompt and even dramatic therapeutic effects frequently follow the intravenous injection of a digitalis body in suitable cases, but these are exceptional.

The intravenous injection of digitalis bodies is attended with some danger, because the organism has no means of ridding itself of an overdose administered intravenously, and we do not know in any case just how much will be required to induce the effect imperatively demanded. A digitalis preparation should be used intravenously or intramuscularly only in those cases in which it is imperative that the therapeutic effects shall be induced within two hours or less, that is, within less time than they can be induced with a fair degree of certainty by oral or rectal administration. In the face of such an emergency the risk must be assumed, and it should be minimized by giving the utmost care to the determination of the dose.

Contraindications for Oral Administration—The only contraindication for oral administration, other than the necessity for haste in inducing the therapeutic effects, is the presence of nausea or vomiting. In such cases, digitalis may be administered by the rectum, and Levy and Wykoff (unpublished data) have found that it is absorbed from the rectum about as rapidly as after oral administration.

Nausea and vomiting are induced by digitalis only after its absorption. They are induced reflexly from the heart itself, and hence are inseparable from the entrance of an overdose of any digitalis body into the circulation, however administered.

It is often asserted that the digitonin present in digitalis irritates the stomach. This is nothing less than a distortion of the facts. There are only traces of digitonin in digitalis, and it would require an amount of digitalis equal to thousands of times the therapeutic dose to yield enough digitonin to irritate the stomach of man.

Digitoxin is by far the most active substance obtained from digitalis, and it is probable that it or a closely related substance is the only principle which contributes materially to the therapeutic effects of digitalis when it is administered orally.

Amorphous strophanthin and crystalline ouabain (so-called crystalline gratus strophanthin) are soluble in water and can be dispensed in ampules of hard glass in which the solution of ouabain remains unchanged for some months. Ouabain may be dispensed in ampules in a buffered solution (i. e., one in which sodium phosphate maintains a neutral reaction), which keeps for long periods. Many specimens of soft glass contain enough alkali to destroy ouabain rapidly, and this fact has given rise to the mistaken idea that ouabain is unfit for use in ampules.

Dosage—It is frequently claimed that intravenous injection has the advantage of absolute precision of dosage. Precision in measuring a dose is commonly confused with precision of dosage. The precise dose of a substance is that which induces a desired effect. It varies with many conditions, so that it is never known for any individual until the effects have been induced in him, and what we generally term the dose of a substance is merely a convenient fraction of the total amount experience has taught us to administer, which is repeated until the desired effects are induced.

The total average dose of fairly active standardized digitalis by the mouth for inducing full therapeutic effects within from thirty-six to forty-eight hours in an adult who has not received digitalis within ten days is about 1.5 gm of the leaf or 15 c.c. of the tincture. The total dose may be divided into several equal parts given every four or six hours, or one half or one third of the total calculated dose may be given at once, and the remainder in two portions after intervals of four or six hours. If there is doubt about recent medication, smaller doses of from 0.1 to 0.3 gm of the leaf, or from 1 to 3 c.c. of the tincture should be given three or four times a day, with observation for toxic symptoms or signs on each occasion before the next dose is administered.

Ambulatory adult patients who are seen only at intervals of a week or more may be given 0.1 gm (15 grains) of the leaf or 1 c.c. (15 minims) of the tincture three times a day by the mouth for a week or two, with the warning to reduce this to one dose daily if toxic symptoms appear. Children require somewhat larger doses per kilogram of weight for saturation and maintenance of digitalization than do adults. Rectal dosage may be calculated in the same way as oral, experience having shown that absorption is as rapid after rectal, as after oral, administration.

Intravenous (or intramuscular) dosage of crystalline ouabain or amorphous strophanthin need rarely if ever, be calculated for saturation. One dose of 0.5 mg as a maximum may be given in the case of an adult, rarely, two or three such doses at intervals of six hours. In an emergency, one dose of 0.5 mg suffices, digitalis being given by the mouth in doses of 0.3 gm (5 grains) of the powdered leaf or 3 c.c. (45 minims) of the tincture every four hours until the therapeutic effects or

signs of toxic action are induced. In case of nausea and vomiting, not the result of digitalization, ouabain or strophanthin may be given intravenously or digitalis by the rectum.

This committee knows of no satisfactory study of the amount of strophanthin or digitalis necessary for saturation by intravenous or intramuscular injection, and of the suitable division into doses and intervals between administration. This subject is in need of careful investigation.

RECOMMENDATIONS

The oral administration of digitalis in the form of the standardized powdered leaf, infusion or tincture, meets every requirement of digitalis therapy, with the exception of those relatively infrequent cases in which immediate relief (within two hours) is imperatively demanded, or when nausea or vomiting precludes the oral method.

When the threatening condition of the patient demands immediate relief and there is no contraindication for the use of digitalis bodies, strophanthin or crystallized ouabain should be injected intramuscularly or intravenously. Great care must be exercised in this method of using any digitalis body in patients who have recently received digitalis or any of its substitutes.

When nausea or vomiting due to causes other than digitalization precludes the oral administration, tincture of digitalis may be administered by the rectum until nausea or vomiting has ceased, after which the digitalis may be administered orally if it is required.

Ouabain may be kept in hard glass ampules or in buffered solution for several months without appreciable change. Physicians should see that pharmacists have available hypodermic tablets containing 0.1 mg, 0.25 mg and 0.5 mg (1/650, 1/250, 1/130 grain). These may be dissolved in 1 c.c., 2.5 c.c. or 5 c.c. (15, 40 or 75 minims) of sterile physiologic sodium chloride solution and injected intravenously or intramuscularly.

The proprietary preparations of digitalis and its principles have no advantage over digitalis, crystalline ouabain and amorphous strophanthin.

Clinical Notes, Suggestions, and New Instruments

A CASE OF NABOTHIAN CYST OF UNUSUAL SIZE*

H. E. HAPPEL, M.D. AND F. P. McNALLEY, M.D. St. Louis

In the literature consulted, the statement is generally made that nabothian cysts of the cervix are small retention cysts, varying from the size of a bird shot to a pea, but no reference to the possibility of their attaining such large size as to be mistaken for any other condition has been found. On this account, we are reporting this case.

REPORT OF CASE

L. O. L., a woman, aged 19, white, referred, Feb. 28, 1922, by Dr. J. Lee Marder, who suspected a cervical pregnancy, had been married three years and had never been pregnant. There was no history of leukorrheal discharge or gonorrheal infection. She began to menstruate at the age of 14 and had been regular until February 1, when the expected period failed to appear. There was a history of "morning sickness," and on two occasions she had observed a few spots of blood on her clothing. Otherwise nothing abnormal had been noticed. Her object in consulting Dr. Marder was to ascertain whether or not she was pregnant.

The general physical examination was negative. Vaginal examination revealed a bluish, globular, cystic tumor, the size

* Read before the St. Louis Medical Society, April 29, 1924.

of a hen's egg, apparently attached by a broad pedicle to the left side of the cervix, completely filling the vault of the vagina. Many large blood vessels were seen traversing the wall of the mass. The tumor was soft, fluctuating and not tender. The uterus was slightly enlarged, anteverted, ante-flexed, thickened anteroposteriorly, and freely movable. The adnexa were not palpably enlarged.

Operation was advised and accepted. March 1 1922, at St. Luke's Hospital, under ether anesthesia, the cyst was excised by an incision made along its attachment to the cervix which could be made out better under anesthesia. In the final separation of the cyst a small opening was made into the cavity, and a clear, glairy fluid escaped. The cervix was sutured as in the repair of a unilateral laceration.

Owing to the escape of some of the fluid there was some shrinkage of the cyst wall, but it was photographed and examined pathologically. Grossly, the specimen consisted of a cyst of 5 cm in diameter. The external surface, where it had been dissected out, was rough. On section the wall was seen to be from 2 to 4 mm in thickness the cavity being filled with clear mucoid material. The lining was white and perfectly smooth.

Microscopically, the wall of the cyst was seen to be composed of connective tissue containing many widely dilated vessels. It was lined by high columnar epithelium similar to that of the cervical glands. The entire wall, but particularly the outer third was densely infiltrated with small round cells.

The pathologic diagnosis was retention cyst of the cervix.

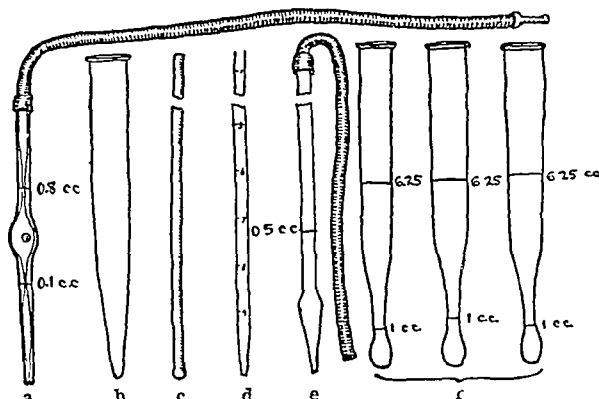
Retention cysts of the cervix are the result of healing of erosions which are almost always caused by endocervicitis. In this case there was no history of such infection, but there had been such a condition in the cervix.

Wall Building

A BLOOD DILUTING PIPET FOR MICRO FOLIN WU METHOD OF BLOOD SUGAR ESTIMATION USING 0.1 CC OF BLOOD PRELIMINARY REPORT*

T. LUTHER BYRD M.D. MILWAUKEE

With this pipet one may make a blood sugar estimation simply and accurately with the minimum quantity of blood 3 drops instead of from 3 to 5 cc. Therefore a painful



Apparatus for micro-Folin Wu method of blood sugar estimation

venipuncture is avoided, only a pin prick in the finger or ear being necessary. It furnishes also a very simple method of obtaining blood from infants, small children and obese patients.

The drawing shows my original pipet (a) graduated at 0.1 cc and 0.8 cc respectively, with detachable rubber tube and mouth piece after the style of a blood diluting pipet for counting blood cells. It is used in the same manner in obtaining blood from the patient. The finger or ear is cleaned with alcohol or iodine and pricked with a pin point cleaned with the same drug. The blood is drawn to the 0.1 cc mark and distilled water to the 0.8 cc mark (one volume of blood seven volumes of distilled water). It is shaken until complete

hemolysis results. The drawing shows also (b) an extra heavy pyrex centrifuge tube, (c) a glass stirring rod, (d) a 1 cc. pipet graduated in 0.1 cc., (e) a 0.5 cc. Oswald-Folin pipet with detachable plain rubber tube, and (f) a set of Folin sugar tubes. The bulb contains 1 cc graduated at 0.25 cc., for total measurement. This is all the apparatus needed for the micro-Folin-Wu method of blood sugar estimation.

The simplicity and accuracy of this method, the apparatus illustrated here being used, has been definitely proved by using it with the original Folin-Wu method as a control on a sufficient number of specimens of blood obtained from patients with diabetes and a number of others without diabetes with the same end-results. This will be reported in detail later.

575 Layton Boulevard

SUBCUTANEOUS EMPHYSEMA FOLLOWING THE REMOVAL OF A LOWER WISDOM TOOTH

LESTER RICHARD CARY D.D.S. NEW YORK

Rosenbaum¹ recently reported a case of subcutaneous emphysema following a tonsillectomy. In the case here reported, a similar condition followed the removal of a lower wisdom tooth.

I removed the lower left third molar in a woman, aged 65. The operation was done under local anesthesia, the inferior dental nerve being blocked at the inferior dental foramen and 3 cc of a 2 per cent procaine-epinephrine solution being used. The tooth having three distinct roots (a rarity in itself), was removed with considerable difficulty. The distobuccal root fractured during the delivery of the tooth necessitating the removal of a portion of the outer alveolar plate in order to remove the fractured fragment. The wound was irrigated and dressed with iodoform gauze. The patient left the office feeling perfectly well.

About two hours later she returned with the cheek and neck on the left side swollen, but not painful. On palpating the swelling I felt a distinct crackling. While she was sitting in the chair, the tissues about the left eye and of the temporal and parietal regions, began to swell. There was no trismus, and on opening the mouth the patient could feel or rather hear, the peculiar crackling sound. Respiration was not interfered with, although there was some difficulty in swallowing. The temperature and pulse were normal. I removed the iodoform gauze from the wound and ordered a solution of hamamelis as a wet dressing, to be kept on the face over the swollen parts.

In four days the swelling disappeared. At no time was there any pain and the operative wound healed rapidly.

895 West End Avenue

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY

SILVER-SALVARSAN (See New and Nonofficial Remedies 1924 p 54)

The following dosage form has been accepted

Sil er Sal arsar 0.6 Gm Ampules

DIPHThERIA TOXIN-ANTITOXIN MIXTURE (See New and Nonofficial Remedies, 1924, p 299)

Parke Davis & Company Detroit

Diphtheria Toxin Antitoxin Mixture 0.1 L+ —Diphtheria Prophylactic Each cubic centimeter of the mixture represents 0.1 L+ dose of diphtheria toxin neutralized with the required amount of antitoxin. Marketed in packages of three bulbs each containing 1 Cc. (Bio 67) representing one immunizing treatment also in vials containing 20 Cc (Bio 69)

¹ Rosenbaum Charles Subcutaneous Emphysema Following Tonsillectomy J. A. M. A. 82 2119 (June 28) 1924

* From the Laboratory of the Sacred Heart Sanitarium

MEDICAL EDUCATION IN THE UNITED STATES

ANNUAL PRESENTATION OF EDUCATIONAL DATA FOR 1924 BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

The tabulated statistics herewith presented for the year ending June 30, 1924, are based on reports received from the medical colleges and other reliable sources. We acknowledge here the splendid courtesy and cooperation of the officers of the colleges who have made the compilation of these complete statistics possible.

STATISTICS OF COLLEGES

Table 1, on pages 510, 511, gives the colleges in session during 1923-1924, the population of the city, the rating given to the college by the Council on Medical Education and Hospitals, the number of students, men and women, registered during the year, the number of 1924 graduates, men and women, the number of graduates holding collegiate degrees, the number of teachers for each college, the number of weeks of actual work in the college year, the total fees for each year, the executive officer of the college, and the dates of beginning and ending of the next session. The figures in heavy-faced type show the totals by states. Beginning on page 521 are given essential facts concerning all medical colleges arranged by states.

HOME STATES OF MEDICAL STUDENTS

Table 2, on pages 514, 515, shows from what state the students came who were in attendance at each medical college during the session of 1923-1924. The influence of the proximity of the medical school is seen in the fact that states having medical colleges contribute larger numbers of students than those which have no colleges. This is shown by the dark zone of figures running diagonally down the page. A comparison of this table with the large tables based on state board examinations,¹ which show the distribution of the alumni of each college, is interesting. The college that has widely distributed alumni usually has a student body from an equally large number of states.

The state furnishing the largest number of students this year was New York with 2,500. Pennsylvania contributed 1,365 and Illinois, 1,308. The next states, in the order of the number of students contributed, are Ohio, 968, Massachusetts, 773, Michigan, 648, California and Texas each 606, and Missouri, 542. Of the twelve states which have no medical schools only two furnished more than 100 students, these being New Jersey and Washington. Of these noncollege states Nevada had only 4 and Wyoming 10. There were 106 students from Hawaii, Porto Rico and the Philippine Islands, and 302 students from foreign countries.

NUMBER OF STUDENTS BY CLASSES

In Table 3, on page 517, the students enrolled in each college are shown by classes. This permits one to

see whether the attendance at each college is increasing or decreasing. The total attendance for the first year was 5,160 or 2 less than last year, and 252 less than in 1922. The second year attendance was 4,441, or 174 less than last year, but 222 more than in 1922. The third year attendance was 4,430, or 529 more than last year and 975 more than in 1922. The enrolment of the fourth year class was 3,797, or 475 more than last year, and 1,148 more than in 1922.

NUMBER OF MEDICAL STUDENTS

The total number of medical students (Table 4) in the United States for the year ending June 30, 1924, excluding premedical, special and postgraduate students,

TABLE 4—Medical College Attendance

Year	Non sectarian	Homeo pathic	Eclectic	Physio Med	Nondescript	Total
1880	9 776	1 270	830			11 826
1890	13 321	1 164	719			15 404
1900	22 710	1 9 9	522			25 171
1901	23,846	1 683	664	80	144	26 417
1902	24 878	1 617	765	91	150	27 501
1903	24 020	1 438	848	149	190	27 615
1904	23 672	1 309	1 014	123	234	28 142
1905	24,119	1 104	578	114	232	26 147
1906	23 116	1 035	644	110	249	25 004
1907	22 703	1 039	645	97	292	24 276
1908	20 936	891	479	90	506	22 602
1909	20 304	899	413	52	227	22 145
1910	20 136	867	455	49	10	21 576
1911	18 414	890	433	49		19 786
1912	17 277	827	308			18 412
1913	16 919	830	256			17 015
1914	16 438	794	270			16 502
1915	13 914	736	241			14 891
1916	13 121	633	263			14 012
1917	12 925	680	250			13 764
1918	12 727	540	133			13 630
1919	12 137	397	86		225	12 930
1920	12,930	386	93		389	13 798
1921	13 627	440	98		301	14 466
1922	14 742	517	85		291	15 635
1923	16 299	341	99		221	16 960
1924	17 034	379	127		188	17,738

was 17,728, an increase of 296 over last year. This is the largest enrolment of students since 1912. There has been a steady increase in enrolments since 1919. Of the total number of students, 17,034 were in attendance at the nonsectarian (regular) colleges, 379 at the homeopathic, 127 at the eclectic, and 188 at the three nondescript colleges.

NUMBER OF MEDICAL GRADUATES

The total number of graduates for the year ending June 30, 1924, was 3,562, or 442 more than last year. The number of graduates from the nonsectarian colleges was 3,395, or 411 more than last year. The number from the homeopathic colleges was 74, or 25 less than last year, and from the eclectic college there was 27, or 11 more than last year. The three non-

(Continued on page 512)

TABLE 1—STATISTICS OF MEDICAL COLLEGES IN THE UNITED STATES AND CANADA

Marginal Number	NAME AND LOCATION OF COLLEGE	Population of City Where College Is Located (Census of 1930) Estimated	Classification by Council on Med- ical Education	No. of Students Registered 1923-24		Graduates 1924		Grads or Ph.D. A B	Number of Lecturers	Total Fees (Dollars)				Session of 1924-25		Marginal Number
				Men	Women	Men	Women			1st Year	2d Year	3d Year	4th Year	Begins 1924	Ends 1925	
1	ALABAMA University of Alabama School of Medicine University (Tuscaloosa)	11,666	A	69	1	10	1	7	13	33	260	260	55	Sept 10	May 26	1
2	ARKANSAS University of Arkansas Medical Department Little Rock †	63,142	A	113	1	10	1	7	42	31	55	55	55	Sept 17	June 4	2
3	CALIFORNIA College of Medical Evangelists Los Angeles	57,673	A	491	66	52	6	115	146	36	291	263	255	Sept 3	May 31	3
4	CALIFORNIA Stanford University School of Medicine San Francisco	57,673	A	193	23	31	3	158	24	261	261	261	261	Oct 2	June 17	4
5	CALIFORNIA University of California Medical School San Francisco †	506,676	A	168	43	31	11	37	271	36	290	248	225	Aug 15	May 13	5
6	COLORADO University of Colorado School of Medicine Denver †	756,491	A	102	16	14	4	5	61	34	211	211	181	Sept 29	June 15	6
7	CONNECTICUT Yale University School of Medicine New Haven	167,537	A	187	9	43	1	34	165	34	305	300	320	Sept 26	June 10	7
8	DISTRICT OF COLUMBIA Georgetown University School of Medicine Washington	437,711	A	197	10	27	2	101	101	34	216	200	210	Sept 26	June 9	8
9	DISTRICT OF COLUMBIA George Washington University Medical School Washington	437,711	A	270	10	27	2	132	132	33	278	278	268	Oct 1	June 5	9
10	GEORGIA Howard University School of Medicine Washington	43,711	A	343	4	88	6	57	57	33	168	168	165	Sept 24	June 10	10
11	GEORGIA Emory University School of Medicine Atlanta	906,616	A	222	4	57	41	115	34	253	233	233	253	Sept 24	June 9	11
12	ILLINOIS University of Georgia Medical Department Augusta †	52,348	A	121	1	31	15	19	52	34	105	100	100	Sept 15	June 1	12
13	ILLINOIS Chicago Medical School Chicago	2,701,701	B	131	6	73	2	6	114	34	366	360	360	Oct 1	June 13	13
14	ILLINOIS General Medical College Chicago	2,701,701	C	98	5	42	0	62	183	34	230	230	216	Sept 29	June 12	14
15	ILLINOIS Loyola University School of Medicine Chicago	2,701,701	A	279	10	23	0	11	134	34	230	230	216	Oct 6	June 12	15
16	ILLINOIS Northern University Medical School Chicago	2,701,701	A	423	68	117	10	127	294	34	240	240	216	Oct 6	June 12	16
17	ILLINOIS Rush Medical College (University of Chicago)	2,701,701	A	467	18	10	12	167	293	34	165	165	165	Oct 6	June 12	17
18	ILLINOIS University of Illinois College of Medicine Chicago †	2,701,701	A	412	18	67	3	89	165	35	175	175	175	Sept 15	June 10	18
19	INDIANA Indiana University School of Medicine Bloomington Indianapolis	314,194	A	320	17	79	3	32	80	34	185	175	185	Sept 22	June 6	19
20	IOWA State University of Iowa College of Medicine Iowa City †	11,267	A	238	17	23	0	15	55	36	175	125	145	Sept 10	June 9	20
21	KANSAS University of Kansas School of Medicine Lawrence Rosedale †	433,911	A	243	17	23	0	15	55	36	175	125	145	Sept 10	June 9	21
22	KENTUCKY University of Louisville Medical Department Louisville	234,801	A	243	17	23	0	15	55	36	175	125	145	Sept 8	June 4	22
23	LOUISIANA Tulane University of Louisiana School of Medicine New Orleans	387,219	A	249	13	80	4	20	112	36	260	260	260	Sept 29	June 10	23
24	MARYLAND Johns Hopkins University Medical Department Baltimore	33,836	A	258	39	67	13	50	236	33	311	317	317	Sept 29	June 9	24
25	MARYLAND Univ. of Maryland School of Med. and Coll. of P. & S. Baltimore †	433,876	A	332	8	75	3	90	210	33	265	265	265	Sept 29	June 9	25
26	MASSACHUSETTS Boston University School of Medicine Boston	748,600	A	183	25	44	2	18	50	35	281	281	246	Sept 23	June 15	26
27	MASSACHUSETTS College of Physicians and Surgeons Boston	48,600	O	26	0	0	0	0	0	0	0	0	0	Sept 23	June 15	27
28	MASSACHUSETTS Harvard University Medical School Boston	748,600	A	494	21	123	7	103	206	36	306	300	300	Sept 22	June 18	28
29	MASSACHUSETTS Tufts College Medical School, Boston	748,600	A	483	50	125	10	116	35	145	145	145	145	Sept 23	May 29	29
30	MASSACHUSETTS Middlesex College of Medicine and Surgery Cambridge —N	169,694	O	112	5	25	2	58	280	34	492	209	202	Sept 29	June 15	30
31	MICHIGAN University of Michigan Medical School Ann Arbor †	19,366	A	563	34	123	11	68	140	35	287	287	287	Sept 23	June 15	31
32	MICHIGAN Detroit College of Medicine and Surgery Detroit †	566,678	A	188	3	74	1	1	116	35	145	145	145	Sept 29	June 20	32
33	MINNESOTA University of Minnesota Medical School Minneapolis †	380,382	A	379	32	58	2	58	280	34	492	209	202	Sept 23	June 15	33
34	MISSISSIPPI University of Mississippi School of Medicine, Oxford †	2,150	A	66	2	2	2	5	18	34	168	168	168	Sept 17	June 2	34
35	MISSOURI University of Missouri School of Medicine Columbia †	10,392	A	673	17	212	5	131	26	35	166	166	166	Sept 10	June 3	35
36	MISSOURI Kansas City College of Medicine and Surgery Kansas City —N	433,911	A	75	2	17	1	1	26	35	166	166	166	Sept 10	June 3	36
37	MISSOURI Kansas City Univ. of Physicians and Surgeons Kansas City —N	433,911	O	15	3	8	0	81	293	32	390	300	300	Oct 1	May 31	37
38	MISSOURI St. Louis College of Physicians and Surgeons St. Louis †	717,897	O	432	12	73	4	60	165	34	315	310	315	Sept 25	June 11	38
39	MISSOURI St. Louis University School of Medicine St. Louis	717,897	A	279	12	73	3	81	73	34	260	190	190	Sept 24	June 6	39
40	NEBRASKA Washington University School of Medicine, St. Louis	717,897	A	465	20	87	3	38	38	35	180	170	160	Sept 15	June 6	40
41	NEBRASKA Creighton University College of Medicine Omaha	191,601	A	161	3	38	3	48	13	37	260	260	260	Sept 17	June 23	41
42	NEBRASKA University of Nebraska College of Medicine Omaha	191,601	A	161	3	38	3	48	13	37	260	260	260	Sept 17	June 23	42
43	NEW HAMPSHIRE Dartmouth Medical School Hanover	1,561	A	44	1	49	0	13	37	37	260	260	260	Sept 17	June 23	43

44	NEW YORK	Albany Medical College, Albany	1907	168	339	42	202	107	7.0	207	Thomas Ordway M.D. Dean	Sept. 22	June 8	44
45		University of Buffalo Medical Department, Buffalo	A	26	10	7	12	146	34	317	C. Sumner Jones M.D. Dean	Sept. 22	June 10	45
46		Columbia University Medical College of Phys. and Surg., New York City	A	33	44	11	83	316	34	322	William Darrach M.D. Dean	Sept. 24	June 11	46
47		Cornell University Medical College, New York City	A	170	51	47	112	383	34	325	William I. Miles M.D. Dean	Sept. 24	June 13	47
48		Long Island College Hospital, New York City-Brooklyn	A	340	7	46	2	170	34	325	Adam W. Miller M.D. Dean	Sept. 24	May 28	48
49		New York Homeopathic Medical College, and Flower Hospital—H	A	119	10	27	2	169	34	326	Israel S. Kliner Ph.D. Dean	Sept. 19	June 2	49
50		University and Bellevue Hospital Medical College, New York City	A	406	22	66	6	177	34	327	Samuel A. Brown M.D. Dean	Sept. 19	June 2	50
51		Syracuse University College of Medicine, Syracuse	A	109	12	37	6	116	34	310	Herman G. Weiskotten M.D. Dean	Sept. 21	June 15	51
52		NORTH CAROLINA	A	132										52
53		University of North Carolina School of Medicine, Chapel Hill*	A	143							I. H. Manning, M.D. Dean	Sept. 13	June 5	53
54		Wake Forest College School of Medicine, Wake Forest	A	35	1						Thurman D. Kitchin M.D. Dean	Sept. 16	June 5	54
55		NORTH DAKOTA	A	35	1									55
56		Univ. of North Dakota School of Med. University (Grand Forks)*	A	803	32	8	113	15	35	50	H. F. French M.D. Dean	Sept. 20	June 9	56
57		OHIO	A	803	32									57
58		Electric Medical College, Cincinnati	B	127	27		2	52	32	170	Rolla I. Thomas M.D. Dean	Sept. 18	May 13	58
59		University of Cincinnati College of Medicine	A	101	47	1	50	106	34	275	Henry Page M.D. Dean	Sept. 20	May 13	59
60		Western Reserve University School of Medicine, Cleveland	A	181	10	3	40	106	34	275	Carl A. Hamann M.D. Dean	Sept. 25	June 16	60
61		Ohio State University College of Medicine, Columbus†	A	271	9	12	34	106	34	143	Eugene F. Campbell M.D. Dean	Sept. 25	June 16	61
62		OKLAHOMA	A	141	7	21	20	70	34	106	LeRoy Long M.D. Dean	Sept. 15	June 9	62
63		University of Oklahoma School of Med. Norman Oklahoma City	A	141	7	21	20	70	34	106	LeRoy Long M.D. Dean	Sept. 15	June 9	63
64		OREGON	A	180	13	38	20	138	34	180	Richard B. Dillehunt M.D. Dean	Sept. 20	June 15	64
65		University of Oregon Medical School, Portland†	A	180	13	38	20	138	34	180	Richard B. Dillehunt M.D. Dean	Sept. 20	June 15	65
66		PENNSYLVANIA	A	1627	158	361	44	182	33	300	William A. Pearson M.D. Dean	Sept. 20	June 4	66
67		Hahnemann Medical College and Hospital of Philadelphia—H	A	1827	779			111	33	300	Ross V. Patterson M.D. Dean	Sept. 20	June 4	67
68		Jefferson University School of Medicine, Philadelphia	A	1827	779			111	33	300	Ross V. Patterson M.D. Dean	Sept. 20	June 4	68
69		University of Pennsylvania School of Medicine, Philadelphia	A	1827	779			111	33	300	William C. Hamman M.D. Dean	Sept. 20	June 13	69
70		University of Pennsylvania School of Medicine, Philadelphia	A	1827	779			111	33	300	William C. Hamman M.D. Dean	Sept. 20	June 13	70
71		University of Pennsylvania School of Medicine, Philadelphia	A	1827	779			111	33	300	William C. Hamman M.D. Dean	Sept. 20	June 13	71
72		University of Pittsburgh School of Medicine, Pittsburgh	A	101	18	31	13	67	33	313	Robert Wilson Jr. M.D. Dean	Sept. 20	June 4	72
73		SOUTH CAROLINA	A	144	3	23	13	68	33	313	Robert Wilson Jr. M.D. Dean	Sept. 20	June 4	73
74		Medical College of the State of South Carolina, Charleston	A	144	3	23	13	68	33	313	Robert Wilson Jr. M.D. Dean	Sept. 20	June 4	74
75		SOUTH DAKOTA	A	35	1									75
76		University of South Dakota College of Medicine, Vermillion*	A	250							Christian P. Lommen B.S. Dean	Sept. 13	June 13	76
77		TENNESSEE	A	588	5	132	2	52	11	36				77
78		University of Tennessee College of Medicine, Memphis†	A	265	4	46	1	17	34	107	James B. McFroy M.D. Dean	Sept. 27	June 8	78
79		McNair Medical College, Nashville	A	171	1	49	1	27	44	162	Fohn J. Mulhoney M.D. President	Oct. 1	May 21	79
80		Vanderbilt University School of Medicine, Nashville	A	162	1	49	1	8	109	34	Lulus F. Burch M.D. Acting Dean	Sept. 24	June 10	80
81		TEXAS	A	437	20	85	4	38	30	188	Walter H. Mourund M.D. Dean	Sept. 29	June 1	81
82		Baylor University College of Medicine, Dallas	A	183	8	17	2	12	30	188	William Ketter M.D. Dean	Oct. 1	May 31	82
83		University of Texas School of Medicine, Galveston†	A	94	12	68	2	29	30	108	William Ketter M.D. Dean	Oct. 1	May 31	83
84		UTAH	A	46										84
85		University of Utah School of Medicine, Salt Lake City*	A	40	6	32	1	10	33	150	Ralph O. Porter M.D. Dean	Sept. 23	June 5	85
86		VERMONT	A	120	6	32	1	10	43	200	Henry Crain Finkham M.D. Dean	Sept. 18	June 22	86
87		University of Vermont College of Medicine, Burlington†	A	120	6	32	1	10	43	200	Henry Crain Finkham M.D. Dean	Sept. 18	June 22	87
88		VIRGINIA	A	481	15	88	6	47	37	230	Manfred Call M.D. Dean	Sept. 17	June 2	88
89		Medical College of Virginia, Richmond	A	294	9	60	5	33	125	230	Theodore Hough Ph.D. Dean	Sept. 15	June 16	89
90		University of Virginia Department of Medicine, Charlottesville	A	187	6	29	1	14	47	340	John N. Simpson M.D. Dean	Sept. 15	June 16	90
91		WEST VIRGINIA	A	104	2									91
92		West Virginia University School of Medicine, Morgantown*†	A	104	2									92
93		WISCONSIN	A	382	20	28	28	70	30	115	Charles R. Bardeen M.D. Dean	Sept. 24	June 22	93
94		University of Wisconsin Medical School, Madison*†	A	149	15	5	28	98	191	34	John J. Carey M.D. Dean	Sept. 24	June 22	94
95		Marquette University School of Medicine, Milwaukee	A	290	5	28								95
96		PHILIPPINE ISLANDS	A	104	38	7	4	10	77	36	Fernando Calderon M.D. Dean	June 16	Mar. 17	96
97		University of the Philippines, College of Med. and Surg. Manila	A	104	38	7	4	10	77	36	Fernando Calderon M.D. Dean	June 16	Mar. 17	97
98		CANADA	A	2339	133	621	24	119	80	180	Allan O. Rankin M.D. Dean	Sept. 29	May 15	98
99		University of Alberta Faculty of Medicine, Edmonton, Alta.	A	38	11	30	2	5	30	132	John Stewart M.D. Dean	Sept. 29	May 15	99
100		Dalhousie University Faculty of Medicine, Halifax, N. S.	A	107	10	30	5	31	31	146	J. C. Connell M.D. Dean	Oct. 1	May 12	100
101		Queen's University Faculty of Medicine, Kingston, Ont.	A	207	13	30	8	28	32	141	Alexander Primrose M.D. Dean	Sept. 30	May 29	101
102		University of Toronto Faculty of Medicine, Toronto, Ont.	A	801	72	40	14	10	280	37	Paul S. Mackibben Ph.D. Dean	Sept. 30	May 29	102
103		University of Western Ontario Medical School, London, Ont.	A	316	40	1	1	280	33	150	Charles F. Martin M.D. Dean	Sept. 22	May 20	103
104		McGill University Faculty of Medicine, Montreal, Que.	A	18	163	3	90	90	33	230	Louis de Lothbère Harwood M.D. Dean	Sept. 22	May 20	104
105		University of Montreal Medical Faculty, Montreal, Que.	A	163	163	3	90	90	33	230	Louis de Lothbère Harwood M.D. Dean	Sept. 22	May 20	105
106		Laval University Faculty of Medicine, Quebec, Que.	A	163	163	3	90	90	33	230	Louis de Lothbère Harwood M.D. Dean	Sept. 22	May 20	106
107		University of Manitoba Faculty of Medicine, Winnipeg	A	213	18	50	2	12	112	112	S. Willis Frowse M.D. Dean	Sept. 15	May 29	107

1. *—Feculent. H.—Homoeopathic. N.—Nonscript.
† Gives only the first two years of the medical course.
‡ The following universities make an additional charge for non-residents: Arkansas, \$0. California, \$900. Colorado, \$175. Georgia, \$200. Illinois, \$25. Indiana, \$75. Iowa, \$15. Kansas, \$30. Maryland, \$60. Michigan, \$20. Detroit, \$25. Minnesota, \$30. Missouri, \$10. Ohio, \$10. Oregon, \$20. Tennessee, \$100. Texas, \$150. Vermont, \$100. West Virginia, \$190. Wisconsin, \$30.
1. The General Medical College has been closed.
2. The numbers of students and graduates are approximate.

(Continued from page 509)

descript colleges had 66 graduates, or 5 less than last year.²

TABLE 5—Medical College Graduates

Year	Non sectarian	Homeo pathic	Eclectic	Physio Med	Nonde script	Total
1880	2 673	350	188			3 241
1890	3 853	380	221			4 454
1900	4 715	413	86			5 214
1901	4 849	387	148	18	12	5 444
1902	4 508	338	138	16	11	5 009
1903	5 088	420	149	24	17	5 698
1904	5 190	371	146	20	20	5 747
1905	5 196	276	153	22	23	5 600
1906	4 841	268	186	22	29	5 364
1907	4 501	295	121	11	32	4 980
1908	4 370	215	176	12	28	4 741
1909	4 163	209	84	15	44	4 515
1910	4 113	183	114	16	14	4 440
1911	4 006	152	110	5		4 273
1912	4 006	185	92			4 483
1913	3 679	209	93			3 981
1914	3 370	154	70			3 594
1915	3 266	185	55			3 506
1916	3 274	166	78			3 518
1917	3 134	180	65			3 379
1918	2 454	114	42		60	2 670
1919	2 423	89	28		116	2 656
1920	2 826	97	30		94	3 047
1921	2 969	115	30		78	3 192
1922	2 358	64	34		73	2 529
1923	2 984	49	16		71	3 120
1924	3 395	74	21		66	3 562

GRADUATES HOLDING DEGREES IN ARTS

Of the 3,562 medical graduates, 2,020 (see Table 6) also obtained degrees in arts or science, or 233 more than last year. There has been a steady increase since 1910, when attention was first called to this item. This year 56.7 per cent of all graduates held collegiate degrees, as compared with 57.2 per cent last year and with only 15.3 per cent in 1910. This increase is what was expected under the general adoption by medical schools of the entrance requirement of two years of

TABLE 6—Medical Graduates with Liberal Arts Degrees

Year	Non sectarian			Homeopathic			Eclectic			Totals		
	Graduates	A B S	Per Cent	Graduates	A B S	Per Cent	Graduates	A B S	Per Cent	Graduates	A B S	Per Cent
1910	4 113	664	16.1	183	13	7.1	114	3	2.6	4 440	680	15.3
1911	4 006	683	17.0	162	18	11.8	110	4	3.6	4 273	705	16.5
1912	4 206	744	17.7	185	15	8.1	92	4	4.3	4 483	763	17.0
1913	3 679	732	19.9	209	20	9.6	93	1	1.1	3 981	753	18.9
1914	3 370	794	23.5	164	7	4.5	70	6	8.6	3 594	807	22.5
1915	3 266	839	25.5	195	16	8.2	57	3	5.5	3 506	838	24.3
1916	3 274	928	28.3	166	20	12.0	58	3	5.1	3 518	948	26.9
1917	3 134	1 018	34.4	180	19	10.5	65	2	3.1	3 379	1 099	32.5
1918	2 454	1 007	41.0	114	15	13.2	60	2	3.3	2 670	1 074	39.4
1919	2 423	1 162	48.0	89	16	18.0	28	2	7.1	2 656	1 180	44.4
1920	2 826	1 307	46.2	97	11	11.3	30	3	10.0	3 047	1 321	43.5
1921	2 969	1 447	48.2	115	33	28.7	30	3	10.0	3 192	1 465	46.0
1922	2 358	1 440	61.1	64	13	20.3	34	2	5.9	2 529	1 455	57.5
1923	2 984	1 710	59.3	49	13	26.5	16	3	18.7	3 120	1 787	57.3
1924*	3 395	1 991	58.6	74	27	36.5	27	2	7.4	3 562	2 020	56.7

Only two graduates of nondescript colleges were reported to have collegiate degrees during the last seven years.

college work. Of the 3,395 nonsectarian school graduates, 1,991 or 58.6 per cent, were reported to have baccalaureate degrees, of the 74 homeopathic graduates, 27, or 36.5 per cent, were so reported, and of the 27

² Two of these nondescript colleges, the Middlesex College of Medicine and Surgery and the Kansas City College of Medicine and Surgery, together with one regular college graded in Class C, the St. Louis College of Physicians and Surgeons, were involved in the Connecticut illegal license scandal according to drastic reports regarding them which were issued by the Connecticut Special Grand Jury on March 14, 1924. These reports were published in THE JOURNAL on March 29, page 1067; April 12, page 1219; and April 5, on page 1140, respectively.

eclectic graduates, 2, or 7.4 per cent, were so reported, and of the 66 graduates of the nondescript colleges none were reported as holding a bachelor's degree in arts or science. As will be noted by referring to Table 11, of the 2,020 graduates holding baccalaureate degrees, 272—the largest number—came from the Illinois colleges. New York reported 202, Pennsylvania reported 182, Massachusetts reported 141, and Ohio reported 113. The percentage of graduates holding collegiate degrees will probably continue to increase, since all the better medical schools are now requiring two years of college work for admission, which brings more students in reach of the combined course for the B.S. and M.D. degrees.

WOMEN IN MEDICINE

During the past year there were 954 women studying medicine, or 73 less than last year. The percentage of women to all medical students this year is 5.4. There were 214 women graduates this year, 3 more than last year. Of all the women matriculants, 110 were in attendance at and 32 graduated from the one medical college for women, while 844 (88.5 per cent) were matriculated in, and 182 (85.2 per cent) graduated from the coeducational colleges.

TABLE 7—Medical Colleges

Year	Non sectarian	Homeo pathic	Eclectic	Physio Med	Nonde script	Total
1880	44	3		1		52
1890	53	6	4	2		65
1900	60	8	5	2		75
1910	76	14	8	2		100
1920	106	16	9	2		133
1930	126	22	9	2	1	160
1940	125	22	10	2	1	160
1950	126	20	9	3	2	160
1960	126	20	9	3	2	160
1970	127	19	9	3	2	160
1980	125	19	9	3	2	158
1990	130	19	8	3	2	162
2000	127	18	9	3	2	159
2010	120	18	9	2	1	151
2020	115	15	8	1	1	140
2030	109	12	8	1	1	131
2040	103	12	7			122
2050	92	10	5			107
2060	87	10	5			102
2070	83	9	4			96
2080	82	10	3			95
2090	83	9	4			96
2100	79	6	2		3	90
2110	76	5	1		3	85
2120	76	5	1		3	85
2130	74	5	1		3	83
2140	74	3	1		3	81
2150	74	2	1		3	80
2160	73	2	1		3	79

NUMBER OF COLLEGES

The number of medical colleges existing each year since 1900 is shown in Table 7. Since June 30, 1924, one medical college, the General Medical College, has been permanently closed. This was formerly the Hahnemann Medical College of Chicago. There are 79 colleges still existing. In the next year, it is announced, the new medical school of the University of Rochester, New York, will be open to receive medical students. This will bring the number back to 80.

Of the 79 colleges, 73 are nonsectarian (regular), 2 are homeopathic, 1 is eclectic and 3 are nondescript. Two of these nondescript colleges, the Kansas City University of Physicians and Surgeons, and the Middlesex College of Medicine and Surgery, are intimately connected with osteopathy or give liberal advanced

standing to students of osteopathic colleges. The third, the Kansas City College of Medicine and Surgery, claims to be eclectic, but is reported as not so recognized by the National Eclectic Medical Association. There are two so-called "regular" medical schools which, like the three just named, are of Class C grade.

The Kansas City College of Medicine and Surgery and the St. Louis College of Physicians and Surgeons and their deans were reported as being deeply involved in the Missouri diploma-mill ring which was exposed by the St. Louis *Star* last October. The five Class C colleges, because of their deficiency in the essentials for teaching, are reported as not recognized by the licensing boards of more than forty states. Whether the diplomas of these schools are purchased or obtained by actual attendance, therefore, their holders are not eligible to obtain licenses in any but a few states. When these few states secure adequate practice laws, the sale of medical diplomas will become an unprofitable business.

TABLE 8—College Terms

Year	23 to 26 weeks		27 to 28 weeks		29 to 30 weeks		31 to 32 weeks		33 to 34 weeks		35 to 36 weeks		Over 36 weeks*	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1901	58	21.5	4	2.4	8	6.0	56	16.4	4	2.5	18	11.3	3	1.9
1902	41	25.4	4	25.4	11	7.1	73	21.3	3	1.9	18	11.6	2	1.8
1903	33	21.4	46	29.9	15	9.7	37	24.0	2	1.3	19	12.1	2	1.3
1904	27	16.3	44	29.1	22	13.3	37	23.3	13	7.8	20	12.9	3	1.8
1905	15	9.4	3	2.1	12	7.5	44	27.3	13	8.1	28	17.4	3	1.9
1906	14	8.7	3	2.1	20	16.1	32	19.9	24	14.9	28	17.4	2	1.3
1907	6	3.7	27	16.8	26	16.1	42	26.1	29	18.0	29	18.0	2	1.3
1908	2	1.3	21	13.8	25	18.4	51	33.6	24	15.8	22	14.5	4	2.6
1909	4	2.3	17	11.6	23	16.4	61	34.9	18	11.3	30	20.5	3	2.0
1910	2	1.0	8	6.0	19	14.3	42	31.5	30	22.6	30	22.6	2	1.5
1911			6	5.0	16	13.3	37	30.8	32	26.7	28	23.4	1	0.8
1912	1	0.9	1	0.9	11	9.5	34	29.3	37	31.8	31	26.7	1	0.9
1913			3	2.8	6	4.7	29	27.4	41	38.7	27	25.5	1	0.9
1914			2	2.0	4	4.0	25	24.8	41	40.5	28	27.7	1	1.0
1915			1	1.0	6	5.3	22	23.2	36	37.9	30	31.6	1	1.0
1916					4	4.2	17	17.0	43	45.3	28	29.0		
1917					1	1.0	15	15.6	46	47.9	31	32.3		
1918					2	2.2	23	25.6	37	41.1	22	24.4		
1919					1	1.1	11	12.9	44	51.8	23	27.1	1	1.2
1920					1	1.2	10	11.8	38	44.7	29	34.1		
1921							11	13.1	39	46.4	28	33.3		
1922							10	13.1	43	56.6	23	30.3		
1923							6	7.5	48	60.0	22	28.0		
1924							6	7.6	44	55.7	23	29.0		

* Information not furnished by six Class C colleges

LENGTH OF TERMS

During the last twenty-four years, as shown in Table 8, there has been a decided lengthening of college terms. This has reference to the weeks of actual work exclusive of holidays. Prior to 1904 the majority of colleges had sessions of twenty-eight weeks or less. Since then the percentage of colleges having sessions of 33 to 34 weeks has increased from 2.5 to 60.0. For nine years no colleges have had sessions shorter than twenty-nine weeks, and for four years the shortest session reported has been thirty-one weeks. Sessions of from thirty-three to thirty-six weeks were reported by 67, or 84.7 per cent, of all colleges. The medical schools which in prior years reported sessions of longer than 36 weeks were night schools.

TUITION AND OTHER FEES

Attention is called in Table 1, on pages 510, 511, to the amount charged by the various medical colleges per annum for tuition, matriculation, and laboratory and graduation fees for each student. In Table 9, the 79

colleges have been grouped according to the amount of fees charged and according to their classification by the Council on Medical Education and Hospitals. Twelve colleges charge fees of \$125 or less per year, thirty between \$125 and \$225, twenty-nine between \$225 and \$325, and eight charge above \$325. Of the twelve col-

TABLE 9—College Fees

Total Fees	Number of Colleges			Total
	Class A	Class B	Class C	
\$0, or less to 1	6			6
1 to 17	6			6
1 to 17	8	1	1	10
1 to 17	1	1	4	6
2 to 32	14			14
2 to 32	14		1	15
Above 32	7	1		8
Total	70	3	6	79

leges charging \$125 or less, all are listed among Class A (acceptable) colleges³ by the Council on Medical Education. Among these are the schools of medicine of several state universities for residents of those states. In contrast, all six of the colleges listed by the Council in Class C charge fees of \$175 to \$300 per year even though the diplomas from these colleges are reported as not recognized by from forty-two to forty-seven state licensing boards.⁴ Although 47 colleges listed in Class A charge fees higher than \$175 per year for each student, the actual expense for teaching that student for the year in these colleges is three or more times as large as the fee charged—made possible because of either state aid or private endowment. No medical college can properly teach modern medicine on the income received from fees alone. As the cost of conducting medical schools has increased, there has also been an increase—but less marked—in the fees charged for tuition. A large provision has already been made for scholarships and loan funds (see page 518) for the benefit of deserving students who are financially poor. Nevertheless, a much more generous provision for such students should be made. This is important since the medical curriculum in recent years has been so severe as to make it difficult or impossible for students to earn money during their attendance at medical school. A mere lack of funds should not prevent these students from becoming physicians.

COLLEGES, STUDENTS AND GRADUATES BY STATES

For the last seven years New York has had eight medical colleges (Table 10)—the largest number—all but one of which are in Class A. Missouri and Pennsylvania have six colleges each and Illinois and Massachusetts have five each. Of Class C colleges, however, Missouri has three, Massachusetts has two and Illinois one. These Class C colleges exist because the licensing boards in certain states do not have or do not exert the power to refuse to examine their graduates.⁴ This year New York had the largest number of students enrolled—2,075, followed by Illinois with 1,913 and Pennsylvania with 1,783 and Massachusetts with 1,352. New

³ See classification in Table 1, pages 510-511.

⁴ See J. A. M. A. 80, 1352 (April 26) 1924, Table D.

(Continued on page 516)

Marginal Number	NAME OF COLLEGE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Marginal Number
		Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Dist of Columbia	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	
1	University of Alabama School of Medicine	57								1	1							1			1	1
2	University of Arkansas Medical Department	1		54	2		1		1	1	1			1	1	4	1	1			3	2
3	College of Medical Evangelists		3	76	9				9	1	1	3	6	1								4
4	Stanford University School of Medicine		1	196								3	3	1		4			1			3
5	University of California Medical School			62										1	1							5
6	University of Colorado School of Medicine			1	83							2	2	2	2	4				1	1	6
7	Yale University School of Medicine			4			103		1				2	2		1			6	3	5	7
8	Georgetown University School of Medicine					18	22				1								1	12	14	8
9	George Washington University Medical School			1	1	4	1	58				1	2			3	1			7	2	9
10	Howard University School of Medicine	5	3	1		4	1	40	9	3			3	1	1	3	9	6			3	10
11	Erory University School of Medicine	43	1	1				1	17	132							1	1				11
12	University of Georgia Medical Department	1							1	102							2				2	12
13	Chicago Medical School												137									13
14	General Medical College				2		2						57	5	2		1					14
15	Loyola University School of Medicine				2		1						193	6	14	3	2					15
16	Northwestern University Medical School		2	1	10	11	1		1			4	152	21	19	10	3	2	1		2	16
17	Rush Medical College (University of Chicago)	6	1	3	9	5	1		1	1	2	4	229	31	98	14	6		2	1		17
18	University of Illinois College of Medicine	1	3		6	1			1				332	9	8	2	1					18
19	Indiana University School of Medicine				2								5	300	1		6					19
20	State University of Iowa College of Medicine				1								3									20
21	University of Kansas School of Medicine		1			1							1									21
22	University of Louisville Medical Department	2			5					1	1		6	30	1	3	178		1			22
23	Louisiana University of Louisiana School of Medicine	49	1	14	7	1	5		11	5			3	1	2	4	121			1		23
24	Johns Hopkins University Medical Department	8	3	9	2	7	2	7	5	10	1	8	5	2	2	6	1	2	68	6		24
25	Univ of Maryland Sch of Med and Coll of P & S	1							1									105				25
26	Boston University School of Medicine				1		9				1			1	1			19	1	60		26
27	College of Physicians and Surgeons Boston																			26		27
28	Harvard University Medical School	6	1	26	5	15		1	3	7	1	7	4	6	4	3		2	4	127		28
29	Harvard Medical School	2				37	1						1				16			339		29
30	Middlesex College of Medicine and Surgery —N													27	2		3			117		30
31	University of Michigan Medical School	1			8	1		2	1	2	1	10	2							1	4	31
32	Detroit College of Medicine and Surgery												2									32
33	University of Minnesota Medical School				1	3	1						7	2	26	2	1					33
34	University of Mississippi School of Medicine				1					1								3		1		34
35	University of Missouri School of Medicine														1							35
36	Kansas City College of Medicine and Surgery —N																					36
37	Kansas City University of Physicians and Surg —N																					37
38	St. Louis College of Physicians and Surgeons *																					38
39	St. Louis University School of Medicine	1	1	1	22	2	1		1		1	56	10	22	20	1	7		1	3		39
40	Washington University School of Medicine	1		8	12	4			1	1	1	3	41	3	6	20	2	1				40
41	Creighton University College of Medicine				3	6					3	3	1	27	7							41
42	University of Nebraska College of Medicine		2		8	1							1	16	9							42
43	Dartmouth Medical School			1		5							1					2				43
44	Albany Medical College			1														1				44
45	University of Buffalo Medical Department			1		1																45
46	Columbia University College of Physicians and Surg	1		5	3	11			1				2	2	3	1		1		6		46
47	Cornell University Medical College			9		5			1				1	2		2	1		1	7		47
48	Long Island College Hospital					8												1		2		48
49	New York Homeo Med Coll and Flower Hosp —H			1		1																49
50	University and Bellevue Hospital Medical College		1	1	7										1			2		2		50
51	Syracuse University College of Medicine					1			1													51
52	University of North Carolina School of Medicine																			5		52
53	Wale Forest College School of Medicine												2	10		2	12		1			53
54	University of North Dakota School of Medicine			1	1																	54
55	Eclectic Medical College Cincinnati —E										1			6	1	3	14					55
56	University of Cincinnati College of Medicine	2			3									1	3							56
57	Western Reserve University School of Medicine				2					2				3				2		1		57
58	Ohio State University College of Medicine				1									2						1		58
59	University of Oklahoma School of Medicine			1												1			1			59
60	University of Oregon Medical School				9	1						3										60
61	Hahnemann Med Coll and Hosp of Philadelphia —H				3	1	3	1	5	3	3	1	1	5	3	2	2			2		61
62	Jefferson Medical College of Philadelphia	4		1	3	1	12	6	5	3	3	1	5	3	3	2		2	10	8		62
63	Temple University School of Medicine					1		1	1					1						1	2	63
64	University of Pennsylvania School of Medicine	4			8	1	1	1	1	1	4		3	1	6	2	1	1	3	4		64
65	Woman's Medical College of Pennsylvania			1	3	1		1			1				2				2			65
66	University of Pittsburgh School of Medicine												1				1					66
67	Medical College of the State of South Carolina									1					3							67
68	University of South Dakota College of Medicine												5	1		5	5		1			68
69	University of Tennessee College of Medicine	12	9			1			2	3			6	2		2	1			1		69
70	Meharry Medical College	8	8	1		1		2		7	19			5			1					70
71	Vanderbilt University School of Medicine	23	5	1		1			2	3			6	5	1	1	18	1	1			71
72	Baylor University College of Medicine	1								3					1	1						72
73	University of Texas School of Medicine				1	1						2										73
74	University of Utah School of Medicine																					74
75	University of Vermont College of Medicine				1		9															75
76	Medical College of Virginia			1		1		2	2									8		7		76
77	University of Virginia Department of Medicine	1				1	1	3	4								2	1		5		77
78	West Virginia University School of Medicine																2					78
79	University of Wisconsin Medical School												7		3	1	1					79
80	Marquette University School of Medicine	1											8		8		2					80

Figures and distribution are approximate

E—Eclectic H—Homeopathic N—Nondescript

[illegible]

(Continued from page 513)

York leads also in the number of graduates, having reported 441, followed by Pennsylvania with 405, Illinois with 383, Massachusetts with 340 and Missouri with 217

TABLE 10—Medical Colleges Students and Graduates by States

State	Colleges		Students		Graduates		Graduates with B S or A B
	Class A and B	Class C	Men	Women	Men	Women	
Alabama	1		69	1			7
Arkansas	1		113	1	10		
California	3		497	86	104	22	115
Colorado	1		102	16	14	4	5
Connecticut	1		187	9	43	1	34
Dist of Columbia	3		65	16	86	4	43
Georgia	2		343	4	88		60
Illinois	4	1	1 810	103	368	15	212
Indiana	1		330	16	67	3	69
Iowa	1		358	7	49		32
Kansas	1		170	17	23		15
Kentucky	1		243	7	46	2	20
Louisiana	1		349	13	80	4	44
Maryland	2		660	47	142	16	100
Massachusetts	3	2	1 298	54	378	12	141
Michigan	2		751	37	157	11	63
Minnesota	1		349	32	56	2	58
Mississippi	1		66	2			
Missouri	3	3	873	17	212	5	131
Nebraska	2		465	20	87	3	81
New Hampshire	1		44				
New York	8		1 907	168	399	42	202
North Carolina	2		132				
North Dakota	1		30	1			
Ohio	4		603	32	171	8	113
Oklahoma	1		141	7	21		20
Oregon	1		180	13	35	3	20
Pennsylvania	6		1 627	156	361	44	182
South Carolina	1		144	3	28		13
South Dakota	1		35	1			
Tennessee	3		568	5	132	2	52
Texas	2		437	20	80	4	38
Utah	1		46				
Vermont	1		120	6	32	1	10
Virginia	2		481	15	98	0	47
West Virginia	1		104	2			
Wisconsin	2		362	20	28		28
Totals	73	6	16 774	964	3 348	214	2 020

QUALIFICATIONS OF STUDENTS AND GRADUATES

Table 11 shows the students and graduates of the last twelve years grouped according to their classification by the Council on Medical Education and Hospitals. During this time the percentage of students enrolled in Class A colleges has increased from 65.4 to 94.7 and, since 1917, the total number of students in attendance at these schools has increased from 11,317 to

TABLE 11—Students and Graduates According to Classification

Year	Students						Graduates					
	Colleges Rated in Class			Colleges Rated in Class			Colleges Rated in Class			Colleges Rated in Class		
	A	%	B	%	C	%	A	%	B	%	C	%
1913	11 322	65.4	4 158	24.4	1 735	10.2	2 539	63.8	1 050	26.4	392	9.8
1914	12 336	74.7	2 838	17.2	1 328	8.1	2 076	73.1	636	19.1	282	7.8
1915	11 314	76.0	2 668	17.9	909	6.1	2 629	74.4	688	19.4	219	6.2
1916	11 162	79.6	2 087	14.9	773	5.5	2 630	74.7	690	19.8	193	5.5
1917	11 317	82.2	1 761	12.8	686	5.0	2 577	76.3	648	19.2	154	4.5
1918	11 522	84.5	1 488	10.9	620	4.5	2 074	75.8	399	14.9	247	9.2
1919	11 344	87.7	1 086	8.4	500	3.9	2 220	83.6	268	10.1	168	6.3
1920	12 320	89.2	680	4.8	798	6.0	2 690	88.4	152	5.0	205	6.6
1921	13 051	90.4	832	6.4	553	3.9	2 812	88.1	200	6.3	180	5.6
1922	14 120	90.3	852	5.5	663	4.2	2 204	87.1	143	5.7	182	7.2
1923	15 982	94.2	522	3.1	456	2.7	2 881	91.7	83	2.9	166	5.4
1924	16 775	94.7	583	3.3	340	2.0	3 343	93.8	115	3.2	104	3.0

16,775 Both the numbers and the percentages of students enrolled in Class B and Class C colleges have been reduced. The percentage of students in Class B colleges has dropped from 24.4 to 3.1 and in Class C colleges from 10.2 to 2.0. Of graduates, also, the percentage in Class A colleges has increased while it has decreased in Class B and Class C colleges. Such reduc-

tions as there have been in the total numbers of students and graduates, therefore, have been at the expense of the lower grade colleges. These figures show decidedly a "survival of the fittest."

COLLEGES CLOSED SINCE 1904

Since 1904 when the campaign for the improvement of medical education was begun, as shown in Table 12, altogether 117 colleges have ceased to exist but, during the same time, 36 new colleges (including three which were reestablished) were organized, making a net reduction of 81. Of the colleges which ceased to exist, 57 were through a merger with other institutions and 58 became extinct. Of the 57 which merged, 48 were Class A and Class B medical schools, but of the 58 colleges which became extinct, 44 were rated in Class C. It will be seen, therefore, that the better grade schools

TABLE 12—Colleges Closed Since 1904

Year	Class A		Class B		Class C		Totals		New Colleges			Total Existing Colleges
	Orgd	Ext	Orgd	Ext	Orgd	Ext	Orgd	Ext	Class A	Class B	Class C	
1905	8	1					8	1	7			108
1906												162
1907	3		3	1			3	1	4			159
1908	2		2		1		4	1	3			154
1909	3		2		7		5	7	12			142
1910	1		2		3	6	6	13			2	131
1911	2	1	3		4	5	4	9				122
1912	1		1		3	4	3	7	1	1	1	118
1913	3		6	1	1	3	10	4	1	1	3	107
1914					2	3	2	5				102
1915	1		1	2	1	2	3	4		1		96
1916	1				1	1	1	2				90
1917					1	1	1	1				86
1918			1	2			1	7				85
1919	1				1	2	4	4				83
1920							1	1				81
1921	2						2	2				80
1922	1		1				2	1				79
1923					1		1	1				
1924							1	1				
Totals	26	5	22	9	9	44	57	58	18	4	14	36

* Reestablished

are still existing as parts of other institutions which were greatly strengthened by the mergers. On the other hand, the schools which were closed outright were mostly those which were unworthy of consideration.

Of the 36 new institutions established, 18 were Class A institutions, including several formed by the merger of two or more other medical schools. All but three of the new Class B and Class C schools have since become extinct. The largest number of schools becoming extinct in any one year was 14 in 1913, of which 10 were by merger. The eight year period from 1905 to 1913 represents the great transition period in medical teaching institutions in the United States.

HINTS TO PROSPECTIVE MEDICAL STUDENTS

The student who is contemplating the study of medicine should note with care the character and classification of the medical school in which he is planning to enroll. The selection of the school in which he is to obtain his medical training is a matter of extreme importance and should be considered with special care. He should note the standards for admission, which will

5 For useful information regarding all medical schools a pamphlet entitled Choice of a Medical School will be sent to any address on receipt of 10 cents.—Ed

TABLE 3—Medical Students Shown by Classes

NAME OF COLLEGE	Enrolled During 1923-24				
	1st Year	2d Year	3d Year	4th Year	Totals
University of Alabama School of Med*	71	30			70
University of Arkansas Medical Dept	47	35	24	10	114
College of Medical Evangelists	44	71	70	58	223
Stanford University School of Medicine	54	37	20	20	149
University of California Medical School	6	53	48	48	211
University of Colorado School of Med	38	72	20	19	118
Yale University School of Medicine	53	71	47	42	190
Georgetown University School of Med	67	54	42	34	197
George Washington University Med School	87	66	50	35	238
Howard University School of Medicine	49	55	94	75	270
Emory University School of Medicine	56	48	61	57	222
University of Georgia Medical Dept	38	28	28	31	125
Chicago Medical School	70	48	80	23	137
General Medical College	11	23	25	44	103
Loyola University School of Medicine	93	72	71	53	289
Northwestern University Medical School	115	87	113	108	423
Rush Medical College (Univ. of Chicago)	98	96	197	142	533
University of Illinois College of Medicine	101	110	112	107	430
Indiana University School of Medicine	100	70	92	70	346
State University of Iowa College of Med	178	92	8	40	365
University of Kansas School of Medicine	40	43	34	70	137
University of Louisville Medical Dept	7	71	66	45	200
Tulane Univ. of Louisiana School of Med	107	77	96	84	364
Johns Hopkins University Medical Dept	79	66	81	51	307
University of Maryland School of Medicine					
and College of Physicians and Surgeons	98	80	84	78	340
Boston University School of Medicine	63	50	48	47	208
College of Physicians and Surgeons, Boston	8	5	6	7	26
Harvard University Medical School	127	120	123	126	496
Tufts College Medical School	153	113	104	137	507
Middlesex College of Med and Surg—N	76	18	45	28	117
University of Michigan Medical School	164	136	161	136	597
Detroit College of Medicine and Surgery	62	51	52	26	191
University of Minnesota Medical School	102	102	103	104	411
University of Mississippi School of Med*	39	29			68
University of Missouri School of Med*	43	34			77
Kansas City College of Med and Surg—N				17	17
Kansas City Univ. of Phys. & Surg.—N	10	8	15	21	54
St. Louis College of Phys. and Surg.		6	5	8	19
St. Louis University School of Medicine	131	106	99	96	432
Washington University School of Medicine	77	60	75	79	291
Creighton University College of Medicine	54	36	36	38	164
University of Nebraska College of Medicine	84	79	89	69	321
Dartmouth Medical School	27	23			49
Albany Medical College	32	21	17	19	89
University of Buffalo Medical Dept	76	56	49	63	244
Columbia Univ. College of Phys. & Surgs	104	89	96	88	377
Cornell University Medical College	46	68	68	58	230
Long Island College Hospital	109	97	94	57	357
New York Homeopathic Medical College					
and Flower Hospital—H	61	51	33	34	169
University and Bellevue Hosp. Med. College	127	94	102	105	428
Syracuse University College of Medicine	62	45	46	38	181
Univ. of N. Carolina School of Med*	37	32			69
Wake Forest College School of Medicine	35	28			53
University of N. Dakota School of Med*	23	13			36
Eclectic Medical College Cincinnati—E	35	30	30	27	122
University of Cincinnati College of Med	58	58	57	64	237
Western Reserve University School of Med	56	40	44	42	191
Ohio State University College of Medicine	62	75	90	53	280
University of Oklahoma School of Med	50	46	31	21	148
University of Oregon Medical School	54	40	40	41	193
Hahnemann Medical College and Hospital					
of Philadelphia—H	67	45	51	47	210
Jefferson Medical College of Philadelphia	168	134	146	145	593
Temple University School of Medicine	60	60	47	17	184
Univ. of Pennsylvania School of Med	108	97	137	132	444
Woman's Medical College of Pa.	20	26	31	33	110
University of Pittsburgh School of Med	75	57	49	36	212
Medical College of the State of South					
Carolina	42	36	40	29	147
Univ. of South Dakota College of Med	18	18			36
Univ. of Tennessee Coll. of Medicine	62	44	56	47	209
Meharry Medical College	62	48	31	41	172
Vanderbilt University School of Medicine	46	54	43	49	192
Baylor University College of Medicine	98	47	37	19	201
University of Texas School of Medicine	64	63	59	70	256
University of Utah School of Medicine*	26	20			46
University of Vermont College of Med	25	25	42	34	126
Medical College of Virginia	84	74	70	75	303
Univ. of Virginia Department of Med	55	53	55	30	193
West Virginia University School of Med*	58	48			106
University of Wisconsin Medical School	90	67			157
Marquette University School of Medicine	68	65	54	88	225
Totals for 1924	5 160	4 441	4 330	3 797	17 728
Totals for 1923	5 162	4 615	3 861	3 322	16 960
Totals for 1922	5 412	4 210	3 856	2 649	15 635

E—Eclectic H—Homeopathic N—Nondescript

* Gives only the first two years of the medical course

† Figures and distribution are approximate

‡ The only report received regarding students in this school includes

names of 17 all of whom were said to have received degrees

§ Figures exact distribution approximate

be found in the descriptive statements of the colleges appearing on pages 521 to 530. A careful review of the material published this week will be of great service to such students.

GRADUATE MEDICAL EDUCATION

The facilities for graduate medical instruction in the United States are set forth on the next few pages. There is not only a list of approved graduate medical schools published alphabetically but also there is a series of subjects showing under each the institutions in which approved courses of instruction are being offered. Although this list of subjects is not large, it is a beginning, and other subjects and institutions will be added as rapidly as they are investigated and found worthy of approval.

It is hoped that by the publication each year of these data, opportunities for advanced instruction in both graduate and undergraduate medical schools may be enlarged and that a constantly increasing use may be made of the abundance of clinical material in this country. The majority of undergraduate medical schools are now equal to those in other leading countries, but increased opportunities should be developed where physicians can secure high grade instruction in graduate medical work.

The Combined Course in Liberal Arts and Medicine

There are sixty-three medical schools which announce that arrangements have been made whereby students can secure degrees in both arts and medicine in six or seven years' time. Many have arranged for the B.S. and M.D. degrees in six years, or the A.B. and M.D. degrees in seven years. Eleven of these colleges give only the first two years of the medical course and therefore, offer only the first four or five years of the combined course. These are indicated by the figures four and five in parentheses. The list of medical schools follows:

College	B.S. and M.D.	A.B. and M.D.
University of Alabama School of Medicine	6 (4)	
University of Arkansas Medical Department	6	
College of Medical Evangelists	6	7
Stanford University School of Medicine	6	8 ¹
University of California Medical School	8 ¹	8 ¹
University of Colorado School of Medicine		7
Yale University School of Medicine	7	
Georgetown University School of Medicine	6	
George Washington University Medical School	6	7
Howard University School of Medicine	7	7
Emory University School of Medicine	7	
University of Georgia Medical Department	7	
General Medical College	6	
Loyola University School of Medicine	7 ¹	
Northwestern University Medical School	7 ¹	
Rush Medical College	8 ¹	
University of Illinois College of Medicine	7 ¹	8 ¹
Indiana University School of Medicine	6	7
State University of Iowa College of Medicine	6	7
University of Kansas School of Medicine	6	7
University of Louisville Medical Department	6	
Tulane University School of Medicine	6	
Johns Hopkins University Medical Department		7
University of Maryland School of Medicine		7
Boston University School of Medicine	6	
Tufts College Medical School		7
University of Michigan Medical School	6	
University of Minnesota Medical School	7 ¹	8 ¹
University of Mississippi	6 (4)	
St. Louis University School of Medicine	6	
University of Missouri School of Medicine		6 (4)
Washington University School of Medicine	6	
Creighton University College of Medicine	6	
University of Nebraska College of Medicine	6	
Dartmouth Medical School	7 (5)	7
Albany Medical College	7	
Columbia University College of Phys. and Surgs		7

1 Eight medical schools require a hospital internship for the M.D., making a total of 7 or 8 years for the combined course.

Cornell University Medical College	6	7
Syracuse University College of Medicine	6	7
University and Bellevue Hospital Medical College	6	7
University of Buffalo Medical Department	6	7
University of North Carolina School of Medicine	7 (5)	
Wake Forest College School of Medicine	6 (4)	
University of North Dakota School of Medicine	6 (4)	7 (5)
Ohio State University College of Medicine	6	7
University of Cincinnati College of Medicine	6	7
Western Reserve University School of Medicine	7	7
University of Oklahoma School of Medicine	6	
University of Oregon Medical School		7
Hahnemann Medical Coll and Hosp Philadelphia	6	
University of Pennsylvania School of Medicine		7
University of Pittsburgh School of Medicine	7	
University of South Dakota College of Medicine	6 (4)	7 (5)
University of Tennessee College of Medicine	6	7
Baylor University College of Medicine		6
University of Texas School of Medicine	6	7
University of Utah School of Medicine	7 (5)	
University of Vermont College of Medicine		7
Medical College of Virginia		7
University of Virginia Department of Medicine	7	7
West Virginia University School of Medicine	6 (4)	
Marquette University School of Medicine	7 ¹	8 ¹
University of Wisconsin Medical School	6 (4)	7 (5)

Scholarships in Medical Schools

As evidence that provision is being made for worthy students, regardless of their financial status, 534 scholarships are reported this year in the following forty-six medical schools

University of Alabama School of Medicine Tuscaloosa	67
Stanford University Medical School * San Francisco	2
University of California Medical School * San Francisco	6
University of Colorado School of Medicine * Denver	1
Yale University School of Medicine * New Haven	2
Georgetown University School of Medicine Washington	2
Emory University Medical School * Atlanta	11
Northwestern University School of Medicine * Chicago	1
Rush Medical College Chicago	7
University of Illinois College of Medicine Chicago	84
Indiana University School of Medicine * Bloomington and Indianapolis	12
State University of Iowa College of Medicine Iowa City	1
University of Kansas School of Medicine * Kansas City	1
Johns Hopkins University Medical Department Baltimore	6
University of Maryland School of Medicine and College of Physicians and Surgeons Baltimore	8
Boston University School of Medicine * Boston	16
Medical School of Harvard University * Boston	50
Detroit College of Medicine and Surgery Detroit	8
University of Missouri School of Medicine * Columbia	10
Washington University School of Medicine St Louis	2
University of Nebraska College of Medicine * Omaha	6
Dartmouth Medical School * Hanover N H	2
Albany Medical College Albany N Y	11
University of Buffalo Department of Medicine * Buffalo	1
Columbia University College of Physicians and Surgeons New York	70
Cornell University Medical College * New York	3
Syracuse University College of Medicine Syracuse	1
University and Bellevue Hospital Medical College * New York	1
University of North Carolina School of Medicine Chapel Hill	1
University of Cincinnati College of Medicine * Cincinnati	12
University of Oregon Department of Medicine * Portland	5
Hahnemann Medical College and Hospital of Philadelphia *	12
Jefferson Medical College Philadelphia	3
Temple University Department of Medicine Philadelphia	3
University of Pennsylvania School of Medicine * Philadelphia	4
University of Pittsburgh School of Medicine Pittsburgh	3
Woman's Medical College of Pennsylvania * Philadelphia	30
Medical College of the State of South Carolina Charleston	8
University of Tennessee College of Medicine Memphis	15
Vanderbilt University Medical Department Nashville Tenn	4
University of Texas Department of Medicine * Galveston	2
University of Vermont Medical School *	55
Medical College of Virginia Richmond	10
University of Virginia Department of Medicine * Charlottesville	2
West Virginia University School of Medicine * Morgantown	1
University of Wisconsin Medical School Madison	6

Total in 46 medical schools

568

* Have loan funds also

Loan Funds

Besides the twenty-five colleges marked by an asterisk (*) in the above list which have loan funds for deserving but needy students such funds are available also at the six following medical schools

Columbia University College of Phys and Surgs New York City
College of Medical Evangelists Loma Linda Calif
Tulane University of Louisiana School of Medicine New Orleans
University of Michigan Medical School Ann Arbor
Wake Forest College School of Medicine Wake Forest N C
University of North Dakota School of Medicine University

GRADUATE MEDICAL SCHOOLS

Principles Regarding Graduate or Postgraduate Medical Schools

The following principles were adopted by the House of Delegates in June, 1923, as a basis for the grading of graduate medical schools

1 *Admission Requirements*—The minimum admission requirement for those wishing to prepare themselves for the practice of a specialty should be graduation from an acceptable (Class A) medical college and completion of at least one year's internship in an approved hospital, or the experience gained by at least five years spent in the active practice of medicine. In the case of reputable physicians who desire to improve themselves for general practice, lenient admission requirements are justified. Courses for *general practitioners* should be open to all physicians who have received the degree of Bachelor or Doctor of Medicine from medical colleges considered acceptable by this Council, or to reputable physicians who were licensed in certain states before graduation was required.

2 *Records*—Records should be kept by each institution showing (a) the preliminary and professional entrance qualifications of every student, which should be verified by authentic or documentary evidence, (b) previous attendance at graduate courses and grades obtained, (c) the subjects for which he is enrolled, (d) evidence of his faithful attendance at his work, (e) evidence of the student's proficiency as demonstrated by his routine or research work, examinations or otherwise, and (f) whether an advanced degree or certificate was granted.

Records, indeed, are just as essential in a graduate as in an undergraduate school. Graduate physicians, indeed, will vary more in their preliminary and professional qualifications than the present-day undergraduates, and a knowledge of these qualifications is essential to decide the character and grade of the work to which the graduate student should be assigned. Again, a knowledge of his proficiency in the work to which he is assigned is essential to know whether he is worthy of advancement, or whether he can be trusted with responsibility for the diagnosis and treatment of patients who may be assigned to his care. Especially are such records important for those preparing for the practice of a specialty.

3 *Supervision*—There should be careful and intelligent supervision of the entire school by a dean or other executive officer who holds, and has sufficient authority to carry out, fair ideals as determined by the present day needs of graduate medical education.

4 *Curriculum and Grading of Instruction Offered*—The graduate school should have its various courses of instruction so graded that the student if he desires, can obtain progressive work in a continuous course of two or three years, as may be necessary to prepare him satisfactorily for the practice of a chosen specialty. If it is found that at some previous time the student has satisfactorily completed certain portions of the work, he might be given advanced standing and thereby enabled to complete his preparation in a shorter time.

Where short courses are offered in any of the clinical specialties, these also should be *so graded that in effect, they would be segments of and in total the time and educational equivalent of the longer courses*. These segments might be taken at different times, but would ultimately lead the student to the same objective. With the exception of the courses in general medicine, all short courses should fit in with a scheme the ultimate aim of which would be a complete and satisfac-

1 The several fields of clinical specialization which are referred to are shown in the following list. The minimum years designated after each subject represent what were considered as essential to insure efficiency in the various specialties by the Committees on Graduate Medical Instruction in their reports which were presented at the Annual Conference on Medical Education, held in Chicago, March 7, 1921.

Field	Years Essential	Field	Years Essential
(a) Surgery General	3	(g) Internal Medicine	3
(b) Surgery Orthopedic	3	(h) Pediatrics	3
(c) Surgery Genito-Urinary	3	(i) Neuropsychiatry	3
(d) Gynecol and Obstet	3	(j) Dermatology	2
(e) Ophthalmology	2	(k) Public Health and Hygiene	2
(f) Otolaryngology	2		

for training in the specialty for which the graduate school provides instruction. Any institution offering work in any specialty, therefore, should provide (a) review courses in anatomy, pathology and the other basic preclinical sciences which apply to the respective specialties, (b) clinics in which students can have the opportunity personally to examine patients in hospital wards and outpatient departments and in which various therapeutic and operative procedures can be demonstrated, (c) courses of operative and laboratory technique, and (d)—to be assigned only when the student's previous training will warrant—assistantships in which, under the supervision of a physician who is recognized as an expert in the particular specialty, he can gradually assume responsibility in the diagnosis and therapeutic or operative treatment of the sick. Opportunity should be provided also for research work in the chosen specialty bearing on both the fundamental sciences and clinical fields. With courses so graded, no student should be admitted to any advanced short course unless, on careful investigation, he is found to possess the knowledge and skill, such as are obtainable in the other prerequisite courses.

5 Teachers.—The graduate medical school should be supplied with a corps of teachers well trained in and responsible for the work in all subjects in which opportunities for study are announced. This should include teachers for essential review or advanced work in the preclinical sciences, as well as those who have in charge work in clinical subjects. The teaching staff should be made up of graduates of or teachers in Class A medical colleges or other high grade educational institutions. The faculty should be organized under the various teaching departments in which work is offered, and a competent teacher should be at the head of each department.

6 Laboratories.—The school should possess well equipped laboratories to provide proper review or advanced work in both laboratory and clinical subjects essential for the specialty or specialties in which opportunities are offered. There should also be an adequate supply of special apparatus, such as stereopticons, balopticons, photomicrographic outfits and roentgen-ray equipment.

7 Library and Museum Facilities.—All graduate work in medicine demands intensive reading in the field studied. Library facilities in most of the graduate schools are either totally lacking or woefully inadequate. In some instances however, this lack is provided for by good medical libraries attached to other nearby institutions. The graduate school, therefore, should have a medical library which should include an ample supply of modern text and reference books, files of bound medical periodicals, and the essential indexes. It should also receive regularly thirty or more standard medical periodicals, the latest numbers of which should be on tables or in racks where they are easily accessible to the graduate students.

The school should be supplied with adequate museum facilities, including anatomic and pathologic specimens.

8 Hospitals and Dispensaries.—Graduate courses in clinical subjects cannot be presented profitably in lectures only. There are objections to allowing short term graduate medical students to assume responsibility for the diagnosis and treatment of patients, nevertheless, ample clinical material must be available for demonstrations for short course students and for the personal use of properly qualified students in the longer term. The graduate medical school, therefore, should have a teaching hospital with a daily average of 200 or more patients, and an outpatient clinic with an average of 100 or more patients each day, or, if teaching is limited to a single specialty, a hospital of not less than twenty-five patients daily, and an outpatient clinic of at least fifty patients daily. In brief, it should have sufficient clinical material to enable it to provide satisfactory clinical study in the specialty or specialties for which opportunities are offered. In connection with the courses for general practitioners, ample clinical material should be available so that the student may be given the opportunity personally to examine patients in hospital wards and in the outpatient department, and to make the essential laboratory examinations.

9 Annual Announcements.—The graduate school should publish annually announcements, bulletins or catalogues giving detailed information in regard to its teachers, laboratories, dispensaries and hospitals, outlines of the various opportunities for study offered in both fundamental and clinical branches, a complete list of the students enrolled during the last preceding year, showing their medical schools and years of graduation and the subjects for which they registered, and a list of those to whom advanced degrees or diploma-like certificates were granted.

10 Advanced Degrees, Diplomas, Certificates.—No advanced degree or diploma-like certificate should be granted to any one who is not known to be proficient in the specialty pursued, nor to any one, under any circumstances, who has not completed at least one academic year in full-time study of a single special subject in the institution granting the certificate, and unless scholarship records of the student show that, throughout the period, he has faithfully attended to his work, and unless reasonable tests show that he has diligently and satisfactorily completed the work for which he was registered.

Approved Graduate Medical Schools, Also Hospitals Providing Approved Residencies in Certain Specialties

- ALBANY MEDICAL COLLEGE Albany N. Y.—Courses in Infectious Diseases and Public Health Dr. Chas. C. Duryce Director
BARNES HOSPITAL 600 S. Kingshighway St. Louis—Courses of instruction in the Dietetic and Insulin Treatment of Diabetes Dr. L. D. Burlingham Med. Supt.
BLOOMINGDALE HOSPITAL FOR MENTAL DISEASES White Plains, New York—Courses in Psychiatry Dr. W. L. Russell Med. Dir.
CHILDREN'S MEMORIAL HOSPITAL 735 Fullerton Ave. Chicago—Special Courses in Infant Feeding Pediatrics and Otolaryngology Dr. G. E. Baxter Secretary
COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS New York—Higher Degree and General Practice Courses Special Summer Course in Public Health (U. S. P. H. S.) Dr. William Darrach Dean
CORNELL UNIVERSITY MEDICAL COLLEGE New York—Higher Degree and General Practice Courses Dr. Walter L. Niles Dean
DETROIT COLLEGE OF MEDICINE AND SURGERY Detroit Mich.—Course in Public Health Dr. I. Verness Registrar
HARVARD MEDICAL SCHOOL Courses for Graduates Boston—Basic Review and General Practice Courses Dr. Samuel R. Meaker Dean
HERMAN KNAPP MEMORIAL EYE HOSPITAL School of Ophthalmology 500 W. 57th St. New York City—Courses in Diseases of the Eye Dr. Gerald H. Grout Secretary
HOWARD UNIVERSITY SCHOOL OF PUBLIC HEALTH AND HYGIENE Washington D. C.—Dr. Algernon B. Jackson Director
JOHNS HOPKINS MEDICAL SCHOOL Baltimore—Special Residencies in the Johns Hopkins Hospital and General Practice Courses Dr. Winford H. Smith Director, Johns Hopkins Hospital
MANHATTAN EYE, EAR AND THROAT HOSPITAL School of Graduate Medical Instruction 210 E. 64th St. New York City—Special Internships in Eye and in Ear, Nose and Throat Mr. Ruben O'Brien Supt.
MASSACHUSETTS EYE AND EAR INFIRMARY, 243 Charles St. Cor. Fruit St. Boston—Special Internships in Eye, and in Ear, Nose and Throat Dr. Frederic A. Washburn Director
MONTFLORE HOSPITAL Gun Hill Road near Jerome Ave., New York City—Special Residencies in Medicine Neurology Tuberculosis and Orthopedic Surgery Dr. Ernst P. Boas Med. Dir.
NEUROLOGICAL INSTITUTE, 149 E. 67th St. New York City—Clinical Clerkships Dr. E. G. Zabriskie, Secretary Medical Board
NEW YORK POST GRADUATE MEDICAL SCHOOL AND HOSPITAL Second Avenue and Twentieth St. New York City—Special Internships and General Practice Courses Dr. William D. Cutter, Dean
NEW YORK SKIN AND CANCER HOSPITAL 2nd Ave. and 19th St. New York City—Courses for General Practitioners Miss Sara Burns, R. N. Supt.
NEW YORK SOCIETY FOR THE RELIEF OF THE RUPTURED AND CRIPPLED 321 East 42nd St. New York City—Special Courses in Orthopedic Surgery Dr. Joseph D. Flick Supt.
OHIO STATE UNIVERSITY COLLEGE OF MEDICINE Columbus—Course in Public Health Dr. E. R. Haythorn Head of Dept. of Public Health
PENNSYLVANIA HOSPITAL 4401 Market St., Philadelphia—Courses in Neurology and Psychiatry Dr. Earl D. Bond, Administrator
PETER BENT BRIGHAM HOSPITAL 721 Huntington Ave. Boston—Special Courses in Medicine Surgery Pathology and Roentgenology Dr. J. B. Howland Supt.
PSYCHIATRIC INSTITUTE Morristown New Jersey—Diabetes and Other Metabolic Diseases Dr. Frederick M. Allen Director
PROVIDENCE CITY HOSPITAL Eaton St., Providence Rhode Island—Courses in Contagious Diseases Dr. D. L. Richardson Med. Supt.
STANFORD UNIVERSITY SCHOOL OF MEDICINE San Francisco—Summer Courses for Graduates Dr. William Ophuls Dean
STATE HOSPITAL FOR MENTAL DISEASES, Howard Rhode Island—Courses in Neurology Dr. Arthur H. Harrington Med. Supt.
STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE Iowa City—Summer Courses in Public Health (U. S. P. H. S.) Dr. Lee Wallace Dean
ST. ELIZABETH'S HOSPITAL Claremont and LeMoine Sts. Chicago—Summer Courses in Clinical Medicine Sister M. Cordula Supt.
TRADEAU SCHOOL OF TUBERCULOSIS, Saranac Lake New York—Courses for General Practitioners Dr. E. R. Baldwin Director
TULANE UNIVERSITY GRADUATE SCHOOL OF MEDICINE (New Orleans Polyclinic) New Orleans—Higher Degree and General Practice Courses Dr. Charles Chassignac Dean
UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE New York City—Special Courses in Surgery Dr. John Wyckoff, Secretary

UNIVERSITY OF CALIFORNIA GRADUATE DIVISION, Berkeley San Francisco
—Higher Degree and Public Health Courses (U S P H S) Dr
Charles B Lipman Dean

UNIVERSITY OF CHICAGO RUSH MEDICAL COLLEGE Wood and Harrison
Sts Chicago—Special and Higher Degree Courses and Residencies

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE Denver—Course
in Ophthalmology Dr Chas N Meader Dean

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE Chicago—Higher
Degree Courses Dr Albert C Eylesmyer Dean

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL Ann Arbor—Summer
Courses in Public Health (U S P H S) Dr Hugh Cabot Dean

UNIVERSITY OF MINNESOTA GRADUATE SCHOOL OF MEDICINE Minne-
apolis Rochester—Higher Degree Fellowships and General Practice
Courses Dr Guy Stanton Ford Dean

UNIVERSITY OF PENNSYLVANIA GRADUATE SCHOOL OF MEDICINE Phila-
delphia—Higher Degree and General Practice Courses Dr George
H Meeker Dean

UNIVERSITY OF WISCONSIN MEDICAL SCHOOL Madison—Course in
Public Health Miss G K McRae Secretary

WASHINGTON UNIVERSITY SCHOOL OF MEDICINE St Louis—Courses in
Otolaryngology Pediatrics, Infant Feeding Obstetrics and Diseases of
the Heart Dr William M Marriott Dean

YALE UNIVERSITY SCHOOL OF MEDICINE New Haven Conn—Course
in Public Health Write to Prof I V Hinoch

Bordeaux—UNIVERSITY OF BORDEAUX France—Special Courses Oto-
rhino Laryngological Surgery Bronchoscopy Plastic Mastoid and Neck
Surgery For information apply to Dr Leon Felderman 4428 York
Rd Philadelphia Pa

London—HOSPITAL FOR SICK CHILDREN Great Ormond St London
W C 1—Special Graduate Course in Pediatrics Address Oswald L
Addison, Dean Medical School

London—NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC
Queen Square Bloomsbury W C 1—Special Courses and Lectures
on the Nervous System Dr J G Greenfield Dean Medical School

London—UNIVERSITY OF LONDON University Extension Dept London
England—Course of Lectures on Medical Hydrology Dr Halburt J
Waring Dean

GRADUATE COURSES IN MEDICAL SUBJECTS AND RESIDENCIES IN SPECIALTIES WHERE THESE COURSES MAY BE OBTAINED

- ANATOMY**
Cornell University Medical College
Harvard Medical School
University of California Graduate Division Berkeley (for advanced
students)
University of Illinois College of Medicine
University of Minnesota Graduate School of Medicine
University of Pennsylvania Graduate School of Medicine
- ANESTHESIA**
Harvard Medical School
New York Post Graduate Medical School
University and Bellevue Hospital Medical College
University of Pennsylvania Graduate School of Medicine
- BACTERIOLOGY**
Cornell University Medical College
Harvard Medical School
New York Post Graduate Medical School
University of California Graduate Division
University of Illinois College of Medicine
University of Minnesota Graduate School of Medicine
University of Pennsylvania Graduate School of Medicine
- BIOCHEMISTRY**
Cornell University Medical College
Harvard Medical School
New York Post Graduate Medical School
University of California Graduate Division Berkeley
University of Illinois College of Medicine
University of Minnesota Graduate School of Medicine
University of Pennsylvania Graduate School of Medicine
- BRONCHOSCOPY**
University of Pennsylvania Graduate School of Medicine
- CARDIOVASCULAR DISEASES**
Harvard Medical School
University of Pennsylvania Graduate School of Medicine
Washington University School of Medicine
- CONTAGIOUS DISEASES**
Providence City Hospital Rhode Island (Residencies)
- DENTAL SURGERY**
Mayo Foundation Rochester Minn (Fellowships)
- DERMATOLOGY**
Cornell University Medical College
Harvard Medical School
Johns Hopkins Hospital (Residencies)
New York Post Graduate Medical School
New York Skin and Cancer Hospital
Stanford University School of Medicine
University of Minnesota Graduate School of Medicine (Fellowships)
University of Pennsylvania Graduate School of Medicine
- DIABETES**
Harvard Medical School
Physiatric Institute Morristown N J
University of Pennsylvania Graduate School of Medicine
- ELECTRO THERAPEUTICS**
Harvard Medical School
University of Pennsylvania Graduate School of Medicine
- GASTRO ENTEROLOGY**
Columbia University College of Physicians and Surgeons
Harvard Medical School
University of Pennsylvania Graduate School of Medicine
- GENITO URINARY**
Harvard Medical School
- GYNCOLOGY**
Harvard Medical School
Johns Hopkins Hospital (Residencies)
New York Post Graduate Medical School
Stanford University School of Medicine
University of California Graduate Division (Residencies)
University of Minnesota Graduate School of Medicine (Fellowships)
University of Pennsylvania Graduate School of Medicine
- IMMUNOLOGY**
Harvard Medical School
University of Pennsylvania Graduate School of Medicine
- INFANT FEEDING**
Children's Memorial Hospital Chicago
University of Pennsylvania Graduate School of Medicine
Washington University School of Medicine
- INSULIN TREATMENT**
Barnes Hospital St Louis
Columbia University College of Physicians and Surgeons
Physiatric Institute Morristown N J
- INTUBATION**
University of Pennsylvania Graduate School of Medicine
- LARYNGOLOGY AND RHINOLOGY**
Cornell University Medical College
Manhattan Eye Ear and Throat Hospital
Massachusetts Eye and Ear Infirmary (Residencies)
New York Post Graduate Medical School
Stanford University School of Medicine
Tulane University Graduate School of Medicine
University of Bordeaux France
University of Chicago Rush Medical College
University of Minnesota Graduate School of Medicine (Fellowships)
Washington University School of Medicine
- MEDICAL HYDROLOGY**
University of London, England
- MEDICINE**
Columbia University College of Physicians and Surgeons
Cornell University Medical College
Johns Hopkins Hospital (Residencies)
New York Post Graduate Medical School
Peter Bent Brigham Hospital Boston (Residencies)
St Elizabeth's Hospital, Chicago (Clinical Medicine)
University of California Graduate Division Berkeley (Residencies)
University of Minnesota Graduate School of Medicine
University of Pennsylvania Graduate School of Medicine
- METABOLIC DISEASES**
Harvard Medical School
Physiatric Institute Morristown N J
Stanford University School of Medicine
University of Minnesota Graduate School of Medicine
- NEPHRITIS**
Harvard Medical School
Physiatric Institute Morristown, N J
- NEUROLOGY AND PSYCHIATRY**
Bloomington Hospital for Mental Diseases White Plains N Y
Columbia University College of Physicians and Surgeons
Cornell University Medical College
Harvard Medical School
Johns Hopkins Hospital (Residencies)
Montefiore Hospital New York City (Residencies)
National Hospital for the Paralyzed and Epileptic W C I London
Neurological Institute New York City
New York Post Graduate Medical School
Pennsylvania Hospital Philadelphia (Residencies)
Stanford University School of Medicine
State Hospital for Mental Diseases Howard R I
University of Minnesota Graduate School of Medicine (Fellowships)
University of Pennsylvania Graduate School of Medicine
- OBSTETRICS**
Harvard Medical School
Johns Hopkins Hospital (Residencies)
University of California Graduate Division (Residencies)
University of Minnesota Graduate School of Medicine
Stanford University School of Medicine
University of Pennsylvania Graduate School of Medicine
Washington University School of Medicine
- OPHTHALMOLOGY AND OTOTOLOGY**
Columbia University College of Physicians and Surgeons
Cornell University Medical College
Harvard Medical School
Herman Knapp Memorial Eye Hospital
Johns Hopkins Hospital Baltimore Md
Manhattan Eye, Ear and Throat Hospital
Massachusetts Eye and Ear Infirmary (Residencies)
New York Post Graduate Medical School
Stanford University School of Medicine
Tulane University Graduate School of Medicine
University of Colorado School of Medicine
University of Minnesota Graduate School of Medicine
University of Pennsylvania Graduate School of Medicine
Washington University School of Medicine
- ORTHOPEDIC SURGERY**
Harvard Medical School
New York Post Graduate Medical School
New York Society for the Relief of the Ruptured and Crippled New
York City (Residencies)
Stanford University School of Medicine
University of Minnesota Graduate School of Medicine (Fellowships)
University of Pennsylvania Graduate School of Medicine
- OTOLARYNGOLOGY**
Columbia University College of Physicians and Surgeons
Harvard Medical School
Johns Hopkins Hospital Baltimore (Residencies)
New York Post Graduate Medical School
University of Chicago Rush Medical College
University of Bordeaux France
University of Minnesota Graduate School of Medicine (Fellowships)
University of Pennsylvania Graduate School of Medicine
Washington University School of Medicine
- PARASITOLOGY AND TROPICAL MEDICINE**
University of Pennsylvania Graduate School of Medicine
- PATHOLOGY**
Cornell University Medical College
Harvard Medical School
Johns Hopkins Hospital Baltimore
New York Post Graduate Medical School
Peter Bent Brigham Hospital Boston
Stanford University School of Medicine

University of California Graduate Division Berkeley (for advanced students)

University of Illinois College of Medicine
University of Minnesota Graduate School of Medicine
University of Pennsylvania Graduate School of Medicine

PEDIATRICS

Children's Memorial Hospital Chicago
Columbia University College of Physicians and Surgeons
Harvard Medical School
Hospital for Sick Children London, England
Johns Hopkins Hospital Baltimore (Residencies)
New York Post Graduate Medical School
Stanford University School of Medicine
University of California Graduate Division (Residencies)
University of Minnesota Graduate School of Medicine (Fellowships)
University of Pennsylvania Graduate School of Medicine
Washington University School of Medicine

PHARMACOLOGY

Cornell University Medical College
Harvard Medical School
Stanford University School of Medicine
University of Illinois College of Medicine
University of Pennsylvania Graduate School of Medicine

PHYSIOLOGY

Cornell University Medical College
Harvard Medical School
University of California Graduate Division
University of Pennsylvania Graduate School of Medicine

PHYSIOTHERAPY

Harvard Medical School
Stanford University School of Medicine

PREVENTIVE MEDICINE (See Public Health)

Harvard Medical School

PROCTOLOGY

Harvard Medical School

PUBLIC HEALTH HYGIENE AND PREVENTIVE MEDICINE

Albany Medical College
Columbia University College of Physicians and Surgeons
Detroit College of Medicine and Surgery
Harvard Medical School
Howard University School of Public Health and Hygiene, Washington, D. C.
Johns Hopkins Medical School Baltimore
Ohio State University College of Medicine
State University of Iowa College of Medicine
University of California Graduate Division
University of Michigan Medical School
University of Pennsylvania Graduate School of Medicine
University of Wisconsin Medical School Madison
Yale University School of Medicine New Haven

RADIOLOGY

New York Skin and Cancer Hospital
Stanford University School of Medicine
University of Minnesota Graduate School of Medicine
University of Pennsylvania Graduate School of Medicine

RESEARCH MEDICINE

University of California Graduate Division (for advanced students)

ROENTGENOLOGY

Harvard Medical School
Johns Hopkins Hospital Baltimore
New York Post Graduate Medical School
New York Skin and Cancer Hospital
Peter Bent Brigham Hospital Boston
University of Minnesota Medical School (Fellowship)

SCURGERY (Surgical Anatomy Surgical Diagnosis Operative Surgery)

Columbia University College of Physicians and Surgeons
Cornell University Medical College
Harvard Medical School
Johns Hopkins Hospital (Residencies)
New York Post Graduate Medical School
Peter Bent Brigham Hospital Boston (Residencies)
Stanford University School of Medicine
University and Bellevue Hospital Medical College
University of California Graduate Division (Residencies)
University of Minnesota Graduate Medical School (Fellowships)
University of Pennsylvania Graduate School of Medicine

SCURGERY (Traumatic and Emergency)

New York Post Graduate Medical School

STYHILOLOGY

Harvard Medical School
New York Skin and Cancer Hospital
Stanford University School of Medicine
University of Pennsylvania Graduate School of Medicine

TUBERCULOSIS

The Trudeau School of Tuberculosis Saranac Lake N. Y.
University of California Graduate Division (Residencies)
University of Pennsylvania Graduate School of Medicine

UROLOGY

Johns Hopkins Hospital (Residencies)
New York Post Graduate Medical School
Stanford University School of Medicine
University of Minnesota Graduate School of Medicine
University of Pennsylvania Graduate School of Medicine

Future Additions to List

This report does not rule out any graduate medical school. Other institutions which are offering higher degree opportunities in medical subjects, other hospitals with special residencies, and other graduate medical schools will be added to the list on application and after, on investigation, their educational standards and provisions for postgraduate education are found to comply with the principles governing graduate medical education.

DESCRIPTION OF MEDICAL COLLEGES

Below are given brief descriptions of the medical colleges in the United States and Canada that are legally chartered to teach medicine, several of which do not grant degrees. The name, address, year of organization, history and date when first class graduated are given in each instance. Unless otherwise stated, a class graduated each subsequent year. Where official reports have been received from the college, information regarding faculty, entrance requirements, length of term, fees, students (excluding specials and postgraduates), graduates, name of dean and next session is given without discrimination. In a few instances in which such reports were not received, the information published is from other reliable sources. Figures for graduates include all who graduated since July 1, 1923. Extract of rules and the membership of the Association of American Medical Colleges are shown following the list of colleges. Figures showing population of cities and states are taken from the United States Census Bureau's report for 1920. Statements have been added showing the preliminary requirements held by state licensing boards where those requirements include one or two years of college work. Eleven states, Alaska (Ter.), Delaware, Illinois, Iowa, Michigan, New Jersey, North Dakota, Pennsylvania, Rhode Island, South Dakota and Washington, require also a year's hospital internship as an essential qualification for a license.

ALABAMA

Alabama, population 2,348,174 has one medical college, the School of Medicine of the University of Alabama, located in Tuscaloosa, a city with a population of 11,996.

In order to secure licenses to practice medicine in Alabama, students must complete two years of work in an approved college of liberal arts, including courses in physics, chemistry, biology and a modern language, prior to entering on the study of medicine.

Tuscaloosa

UNIVERSITY OF ALABAMA SCHOOL OF MEDICINE. University Campus Tuscaloosa—Organized in 1859 as the Medical College of Alabama. Classes graduated in 1861 and subsequent years excepting 1862 to 1868 inclusive. Reorganized in 1897 as the medical department of the University of Alabama. Present title assumed in 1907 when all property was transferred to the University of Alabama. In 1920 clinical teaching was suspended and the medical school was removed to the university campus at Tuscaloosa. The faculty includes 7 professors and 6 instructors, assistants, etc. a total of 13. The course of study covers two years of thirty-six weeks each. The tuition fee each year is \$260. The Dean is Dr. Clyde Brooks. Total registration for 1923-1924 was 70. The fifty-ninth session begins Sept. 10, 1924, and ends May 26, 1925.

ARKANSAS

Arkansas, population 1,752,204, has one medical college, the Medical Department of the University of Arkansas, located in Little Rock, a city of 65,142.

To secure licenses to practice medicine in Arkansas, students must complete two years of collegiate work, including college courses in physics, chemistry, biology and a modern language, before beginning the study of medicine.

Little Rock

UNIVERSITY OF ARKANSAS MEDICAL DEPARTMENT. Markham and Center Streets—Organized in 1879 as the Medical Department of Arkansas Industrial University. It assumed the present title in 1899. In 1911 the College of Physicians and Surgeons united with it and the new school was made an integral part of the University of Arkansas. The first class was graduated in 1880. Clinical teaching was suspended in 1918 but resumed in 1923. The faculty consists of 20 professors and 22 lecturers and assistants, total 42. The curriculum embraces four years of thirty-four weeks each. Entrance requirements are two years of collegiate work in addition to a four-year high school course. The fees are \$55 each year for resident and \$105 for nonresident students. The Acting Dean is Dr. Arthur R. Stover. The total registration for 1923-1924 was 114 graduates, 10. The forty-sixth session begins Sept. 17, 1924, and ends June 4, 1925.

CALIFORNIA

California, population 3,426,861, has three medical colleges. Two are located in San Francisco, a city of 506,676 inhabitants. They are Stanford University School of Medicine and the College of Medicine of the University of California. The College of Medical Evangelists is located at Loma Linda and Los Angeles, the latter city having a population of 576,673.

To secure a license to practice medicine in California under the physician's and surgeon's certificate, students must complete at least a year of work of college grade including courses in physics, chemistry and biology before beginning the second half of the second year in the study of medicine

Berkeley-San Francisco

UNIVERSITY OF CALIFORNIA MEDICAL SCHOOL University Campus Berkeley Second and Parnassus Avenues San Francisco—Organized in 1863 as the Toland Medical College The first class graduated in 1864 In 1872 it became the Medical Department of the University of California In 1909 the College of Medicine of the University of Southern California at Los Angeles by legislative enactment became a clinical department This Los Angeles portion was changed to a graduate school in 1914 In 1915 the Hahnemann Medical College of the Pacific was merged and elective chairs in homeopathic materia medica and therapeutics were provided Three years of collegiate work are required for admission The work of the first year and a half is given at Berkeley and the work of the last two and a half years at San Francisco The faculty is composed of 68 professors and 155 associates and assistants a total of 223 The course covers four years of eight months each and an additional fifth year consisting of an internship in a hospital or of special work in a department of the medical school Fees for the four years respectively for residents of California are \$290 \$248 \$235 and \$225 nonresidents are charged \$300 additional each year The Acting Dean is Dr L S Schmitt Total registration for 1923 1924 was 211 graduates 43 The fifty second session begins Aug 15, 1924 and ends May 13 1925

Loma Linda-Los Angeles

COLLEGE OF MEDICAL EVANGELISTS—Organized in 1909 The first class graduated in 1914 The laboratory departments are at Loma Linda the clinical departments at Los Angeles on property bounded by Boyle Michigan Bailey and New Jersey streets The faculty is composed of 48 professors and 98 associates assistants and instructors a total of 146 The course extends over five years of nine months each—the fifth year consisting of an internship in a hospital or of special work in a department of the Medical School The work of the first two years is given at Loma Linda and of the third and fourth years at Los Angeles Two years of college work are required for admission The total fees for the four years respectively are \$221 \$263 \$258 and \$255 The President is Dr Newton Evans Loma Linda Calif and the Dean of the Clinical Division is Dr P T Magan Los Angeles The total registration for 1923 1924 was 223 graduates 58 The sixteenth session begins Sept 3 1924 and ends May 31 1925

San Francisco-Stanford University

STANFORD UNIVERSITY SCHOOL OF MEDICINE Campus Sacramento and Webster Streets San Francisco—Organized in 1908 when by an agreement the interests of Cooper Medical College were taken over The first class was graduated in 1913 The faculty consists of 70 professors and 88 lecturers assistants etc a total of 158 Three years of collegiate work are required for admission The school has the quarter system and the completion of any three quarters constitutes a college year The course covers four years of nine months each plus a fifth year of practical or intern work The total fees for each of the first four years are \$261 The Dean is Dr W Ophuls San Francisco The total registration for 1923 1924 was 149 graduates 25 The fifteenth session begins Oct 2 1924 and ends June 17 1925

COLORADO

Colorado, with a population of 939,629 has one medical college, the University of Colorado School of Medicine It is located in Denver, which has a population of 256,491

The Colorado State Board of Medical Examiners will register without further examination graduates of medical colleges in good standing who present licenses issued after examination by any other licensing board The law permits any one, graduate or nongraduate, to try the board's written examination

Boulder-Denver

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE—Organized in 1883 Classes were graduated in 1885 and in all subsequent years except 1898 and 1899 Denver and Gross College of Medicine were merged Jan 1 1911 The faculty embraces 33 professors and 28 lecturers instructors and assistants a total of 61 The work embraces a graded course of four years of nine months each and a year's internship in a hospital The entrance requirements are two years of college work counting toward a degree in arts in an accredited college or university The fees for residents of Colorado for each of the four years are respectively \$211 \$211 \$176 and \$181 Nonresidents pay \$105 more each year The Dean is Dr Charles N Meader The total registration for 1923 1924 was 123 graduates 18 The forty third session begins Sept 29 1924 and ends June 15 1925

CONNECTICUT

Connecticut, with a population of 1,380,631, has one medical college Yale University School of Medicine, located in New Haven, population 162,537

Students who desire to practice medicine in Connecticut will not be eligible unless prior to entering the study of

medicine, they complete, in addition to an accredited four-year high school education, at least nine months of collegiate work including college courses in physics, chemistry and general biology

New Haven

YALE UNIVERSITY SCHOOL OF MEDICINE 150 York Street and at corner Congress Avenue and Cedar Street—Chartered in 1810 as the Medical Institution of Yale College Organized in 1812 instruction began in 1813 first class graduated in 1814 A new charter in 1879 changed the name to the Medical Department of Yale College In 1884 the Connecticut Medical Society surrendered such authority as had been granted by the first charter In 1887, Yale College became Yale University The faculty consists of 30 professors and 106 lecturers and assistants a total of 136 The requirements for admission are three years of collegiate work plus evidence of satisfactory completion of courses in general physics general inorganic chemistry qualitative analysis general biology organic chemistry and physical chemistry or laboratory physics all reasonably equivalent to the courses in these subjects in Yale University The student also must have two years of French or German The course covers four years of nine months each The fees for the four years respectively are \$305 \$300 \$300 and \$320 The Dean is Dr Milton C. Winternitz The total registration for 1923 1924 was 196 graduates 44 The one hundred and twelfth session begins Sept 25 1924, and ends June 10 1925

DISTRICT OF COLUMBIA

The District of Columbia, population 437,571, has three medical colleges George Washington University Medical School Georgetown University School of Medicine and Howard University School of Medicine

Washington

GEORGE WASHINGTON UNIVERSITY MEDICAL SCHOOL 1335 H Street, N W—Organized in 1825 as the Medical Department of Columbian College Also authorized to use the name National Medical College. Classes were graduated in 1826 and in all subsequent years except 1834 to 1838 and 1861 to 1863 inclusive The original title was changed to Medical Department of Columbian University in 1873 In 1903 it absorbed the National University Medical Department In 1904 by an act of Congress the title of George Washington University was granted to the institution The faculty is composed of 47 professors and 85 instructors demonstrators and assistants a total of 132 Two years of collegiate work are required for admission The course covers four years of thirty two weeks each The fees for the four years respectively are \$281 \$278 \$278 and \$268 The Dean is Dr William C Borden The total registration for 1923 1924 was 238 graduates 29 The one hundred and first session begins Sept 24 1924 and ends June 3 1925

GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE 920 H Street N W—Organized in 1851 The first class graduated in 1852 The faculty contains 63 professors 38 instructors and assistants total 101 Two years of collegiate work are required for entrance The course of study covers four terms of eight and one half months each The fees for each of the four sessions respectively are \$215 \$200 \$200 and \$210 The Dean is Dr George M Kober The registration for 1923 1924 was 197 graduates 34 The seventy fourth session begins Sept 26 1924, and ends June 9 1925

HOWARD UNIVERSITY SCHOOL OF MEDICINE Fifth and W Streets N W—Chartered in 1867 Organized in 1869 The first class graduated in 1871 Colored students compose a majority of those in attendance The faculty comprises 28 professors and 24 lecturers and assistants 52 in all The admission requirements are two years of collegiate work including physics chemistry botany and zoology English and two years of French or German The course covers four years of thirty three weeks each The fees of each of the four sessions respectively are \$168 \$158 \$158 and \$165 The Dean is Dr Edward A Balloch Registration for 1923 1924 was 236 graduates 27 The fifty seventh session begins Oct 1, 1924, and ends June 5 1925

GEORGIA

Georgia, population 2,895,832, has two medical colleges, University of Georgia Medical Department, located in Augusta, population 52,548 and the Emory University School of Medicine in Atlanta a city of 200,616

In order to secure a license to practice medicine in Georgia, students must complete two years of work in an approved college of liberal arts and sciences, including courses in physics, chemistry and biology, prior to entering on the study of medicine

Atlanta

EMORY UNIVERSITY SCHOOL OF MEDICINE 98 N Butler Street—Organized in 1854 Classes graduated 1855 to 1861 when it suspended Reorganized in 1865 A class graduated in 1865 and each subsequent year except 1874 In 1898 it merged with the Southern Medical College (organized in 1878) taking the name of Atlanta College of Physicians and Surgeons In 1913 it merged with the Atlanta School of Medicine (organized in 1903) reassuming the name of Atlanta Medical College. Became the Medical Department of Emory University in 1915 assumed present title in 1917 Two years of collegiate work are required for admission The faculty has 17 professors and 98 associates and assistants a total of 115 The course of study is four years of thirty four

weeks each. The fees for each of the four years respectively are \$253, \$233, \$228 and \$253. The Dean is Dr. W. S. Ilkin. Total registration for 1923-1924 was 222 graduates, 57. The next session begins Sept. 24, 1924, and ends June 9, 1925.

Augusta

UNIVERSITY OF GEORGIA MEDICAL DEPARTMENT University Place—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. Since 1873 it has been known as the Medical Department of the University of Georgia. Entire property transferred to the university in 1911. Classes were graduated in 1833 and in all subsequent years except 1862 and 1863. The faculty includes 14 professors and 38 assistants, 52 in all. Two years of collegiate work are required for entrance. The course is four years of thirty-four weeks each. Fees are \$5 for matriculation and \$100 each year for residents of Georgia and \$300 each year for non-residents. The Dean is Dr. Harry Goodrich. The total registration for 1923-1924 was 125 graduates, 11. The ninety-third session begins Sept. 15, 1924 and ends June 1, 1925.

ILLINOIS

Illinois, population 6,485,280, has five medical colleges, one of which gives instruction at night, all located in Chicago, a city of 2,701,705 inhabitants. They are as follows: Rush Medical College, Northwestern University Medical School, University of Illinois College of Medicine, Loyola University School of Medicine and the Chicago Medical School. The General Medical College was suspended June 30, 1924.

To be eligible for license to practice medicine in Illinois, students must complete two years of collegiate work including courses in physics, chemistry, biology and a modern language before entering on the study of medicine. In addition to their four-year course in medicine they must complete also a year's internship in a hospital.

Chicago

RUSH MEDICAL COLLEGE—Founded in 1837, organized in 1843 as the medical department of Lake Forest University from 1887 until 1898 when it became affiliated with the University of Chicago. The first class graduated in 1844. The faculty is composed of 117 professors, 177 associates, instructors, etc., a total of 294. The requirements for admission are three years of college work including courses in college chemistry, physics and biology and a reading knowledge of German or French. Classes are limited to 100 students in each of the freshman and sophomore classes and to 130 students in each of the clinical years. No application for admission is accepted after September 1. The school operates under the quarter system in which the year is divided into four quarters of twelve weeks each; the completion of the work of three of these quarters gives credit for a college year. The course covers four years of eight and a half months each and a fifth year consisting of a hospital internship or of a fellowship in one of the departments. All freshman and sophomore studies are given at the University of Chicago. The clinical years are given in the building at the corner of Wood and Harrison Streets. The tuition fees for each of the four years respectively are \$250, \$240, \$240 and \$260. The Acting Dean is Dr. Ernest E. Irons. Total registration for 1923-1924 was 533 graduates, 129. The eightieth session begins Oct. 1, 1924 and ends June 14, 1925.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL 2421 South Dearborn Street—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869, but retained the name of Chicago Medical College until 1891 when the present name was taken. Became an integral part of Northwestern University in 1905. The faculty comprises 72 professors and 111 lecturers and assistants, a total of 183. The requirements for admission are such as will admit to the College of Liberal Arts of Northwestern University, plus two years of college work including courses in physics, chemistry, biology and a modern language. The course covers four years of eight months each. The fees for the four years respectively are \$220, \$220, \$216 and \$210. The Acting Dean is Dr. James Persons Simonds. The total registration for 1923-1924 was 423 graduates, 93. The sixty-fifth session begins Sept. 30, 1924 and ends June 13, 1925.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE 508 S. Honore Street—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897 and an integral part in 1910. The relationship with the university was canceled in June 1912 but restored in March 1913 when the present title was assumed. Two years of collegiate work are required for admission. The curriculum covers four years of thirty-three weeks each and a year's internship in an approved hospital. The faculty is composed of 69 professors, 134 assistants and instructors, a total of 203. The tuition fees are \$165 each year for resident students and \$35 extra for nonresidents. The Dean is Dr. Albert C. Eycleshymer. The total registration for 1923-1924 was 428 graduates, 71. The forty-third session begins Oct. 6, 1924 and ends June 12, 1925.

LOYOLA UNIVERSITY SCHOOL OF MEDICINE 706 S. Lincoln St., Chicago—Organized in 1868 as the Bennett College of Eclectic Medicine and Surgery. Eclecticism dropped and title of Bennett Medical College assumed in 1909. First class graduated in 1870 and a class graduated each subsequent year. Absorbed the Illinois Medical College in 1910 and the Reliance Medical College in 1911. In 1910 it became by

affiliation the School of Medicine of Loyola University; the university assumed full control in 1915. Took over by purchase the Chicago College of Medicine and Surgery in 1917. Two years of college work are required for admission. The faculty is composed of 64 professors, 50 assistants and instructors, a total of 114. The total fees are \$300 each year. The Dean is Dr. Louis D. Moorhead. The total enrollment for 1923-1924 was 289 graduates, 23. The next session begins Oct. 1, 1924, and ends June 13, 1925.

CHICAGO MEDICAL SCHOOL, an afternoon and night school, located at 3832 Rhodes Avenue—Organized in 1911 as the Chicago Hospital College of Medicine, chartered in 1912. In December 1917 the classes of the Jenner Medical College were transferred to it. Total registration for 1923-1924 was 136 graduates, 22. Official reports state that the diplomas from this college are not recognized by the licensing boards of Illinois and of forty-five other states.

INDIANA

Indiana, population 2,930,390, has one medical college, the Indiana University School of Medicine, located at Indianapolis, a city of 314,194 people, except that the work of the first year is offered also at Bloomington, the seat of the University.

Students who intend to practice medicine in Indiana must complete two years of collegiate work, in addition to an accredited four-year high school course, prior to beginning the study of medicine.

Bloomington and Indianapolis

INDIANA UNIVERSITY SCHOOL OF MEDICINE—Organized in 1903 but did not give all of the work of the first two years of the medical course until 1905. In 1907 by union with the State College of Physicians and Surgeons the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879) and the Fort Wayne College of Medicine (organized in 1879) merged into it. The first class was graduated in 1908. The faculty consists of 65 professors and 100 lecturers, associates and assistants, a total of 165. Two years of collegiate work are required for admission. The work of the first year is emphasized only at Bloomington. The work of the other three years is all at Indianapolis. The fees each year are \$175 for residents of Indiana and \$250 for nonresidents. Matriculation fee \$5, microscope fee \$5 to \$7.50 per semester. A fifth optional intern year leading to the M.D. cum laude has been added. The Assistant Dean at Bloomington is Dr. B. D. Myers, the Dean is Dr. Charles P. Emerson, Indianapolis. The total registration for 1923-1924 was 346 graduates, 70. The next session begins Sept. 15, 1924, and ends June 10, 1925.

IOWA

Iowa, population 2,404,021, has one medical college, the College of Medicine of the State University of Iowa, located in Iowa City, population 11,267.

Students who desire to practice medicine in Iowa must complete two years of work in an approved college of liberal arts prior to beginning the study of medicine, this preliminary college work to have included courses in physics, chemistry, biology and a foreign language. Hereafter, also, they must have completed a year's internship in an approved hospital.

Iowa City

STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE University Campus—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. The faculty is made up of 34 professors, 46 lecturers, demonstrators and assistants, a total of 80. Two years of college work, including courses in physics, chemistry, biology, French or German and English are required for admission. The course of study covers four years of thirty-four weeks each. The tuition fee is \$175 each year for residents of Iowa and \$350 for nonresidents plus a matriculation fee of \$10 and a graduation fee of \$10. The Dean is Dr. Lee Wallace Dean, Iowa City. Total registration for 1923-1924 was 365 graduates, 49. The fifty-fifth session begins Sept. 22, 1924 and ends June 6, 1925.

KANSAS

Kansas, population 1,769,257, has one medical college. The School of Medicine of the University of Kansas gives its first two years in Lawrence, population 12,456, and the last two years in Rosedale, a suburb of Kansas City, which with Kansas City, Mo., have a combined population of 433,261.

Students who desire to practice medicine in Kansas must complete at least two years of collegiate work including college courses in physics, chemistry and biology in addition to an accredited four-year high school course.

Lawrence and Rosedale

UNIVERSITY OF KANSAS SCHOOL OF MEDICINE—Organized in 1880. It offered only the first two years of the medical course until in 1905 when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894 and

the Medico Chirurgical College founded in 1897. First class graduated in 1906. The clinical courses are given at Rosedale. Absorbed Kansas Medical College in 1913. The faculty including lecturers and clinical assistants numbers 65. The requirements for admission are two years of collegiate work. The course covers four years of nine months each. The total fees for residents of the state for each of the four years are, respectively \$125 \$125 \$145 and \$145. For nonresidents the fees are \$10 additional each year. The Associate Dean is Dr. M. T. Sudler. The total registration for 1923-1924 was 137 graduates 23. The forty fifth session begins Sept. 10, 1924 and ends June 9, 1925.

KENTUCKY

Kentucky, population 2,416,630, has one medical college, the University of Louisville Medical Department, situated in Louisville, a city of 234,891 inhabitants.

To be eligible for license to practice medicine in Kentucky, students must complete two years of college work, including courses in physics, chemistry, biology and a modern language prior to beginning the study of medicine.

Louisville

UNIVERSITY OF LOUISVILLE SCHOOL OF MEDICINE. First and Chestnut Streets—Organized in 1837 as Louisville Medical Institute. The first class graduated in 1838 and a class graduated in each subsequent year except in 1863. In 1846 name changed to University of Louisville Medical Department. In 1907 it absorbed the Kentucky University Medical Department. In 1908 the Louisville Medical College the Hospital College of Medicine and the Kentucky School of Medicine. In the fall of 1922 it became more closely correlated in the University of Louisville and changed its name to the University of Louisville School of Medicine. About the same time it assumed complete control of the professional side of the Louisville City Hospital on a twelve months basis under an agreement with the City Administration the Dean becoming Chairman of the Hospital Staff Executive Committee and the Professor of Medicine the Hospital Staff Executive, with the Hospital Superintendent as business manager and secretary. Two years of college work required for admission. It has a faculty of 26 professors 18 associate and assistant professors, 3 lecturers 42 instructors and 23 assistants a total of 112. Students limited to 75 Freshmen, 65 Sophomores 60 Juniors and 60 Seniors. Course covers four years of thirty two weeks each exclusive of vacations and examinations. Fees for four years are respectively \$260 \$260 \$270 and \$290. The Dean is Dr. Stuart Graves. Total registration for 1923-1924 was 250 graduates 48. Next session begins Sept. 8, 1924 and ends June 4, 1925.

LOUISIANA

Louisiana, having a population of 1,798,509, contains one medical college, the School of Medicine of the Tulane University of Louisiana, situated in New Orleans, a city of 387,219.

Students who desire to practice medicine in Louisiana must complete at an approved college or university, two years of college work, including biology, physics, chemistry and a modern language, before entering on the study of medicine.

New Orleans

TULANE UNIVERSITY OF LOUISIANA SCHOOL OF MEDICINE. University Campus and 1551 Canal Street—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years except 1863-1865 inclusive. It was transferred to the Medical Department of the University of Louisiana in 1847 and became the Medical Department of the Tulane University of Louisiana in 1884. Present name in 1913 when it became the School of Medicine of the College of Medicine of the Tulane University of Louisiana. The faculty has 35 professors and 108 assistant professors instructors and assistants a total of 143. The course covers four years of thirty two weeks each. Two years of collegiate work are required for admission. Total fees for each of the four years respectively are \$235 \$235 \$225 and \$255. The Dean is Dr. Charles C. Bass. The total registration for 1923-1924 was 362 graduates 84. The ninetieth session begins Sept. 25, 1924 and ends June 10, 1925.

MARYLAND

Maryland with a population of 1,449,661, contains two medical colleges located in Baltimore, a city with 733,826 inhabitants. They are as follows: Johns Hopkins University Medical Department and the University of Maryland School of Medicine and College of Physicians and Surgeons.

To be eligible to practice medicine in Maryland, students, in addition to a four-year high school education must complete at least two years of college work including courses in physics chemistry, biology and French or German, prior to beginning the study of medicine.

Baltimore

JOHNS HOPKINS UNIVERSITY MEDICAL DEPARTMENT. Washington and Monument Streets—Organized in 1893. The first class graduated in 1897. The faculty consists of 61 professors and 175 clinical professors etc. a total of 236. The requirements for admission demand that the applicant either has (a) completed the chemical biologic course which

leads to the A.B. degree in the university or (b) graduated at an approved college or scientific school and has a knowledge of French and German (two years each of college instruction) physics and biology such as may be obtained from a year's course and a three years course in chemistry. The course extends over four years of eight and one half months each. The total fees for each of the four years are respectively \$311 \$317 \$317 and \$317. The Dean is Dr. Lewis H. Weed. Total registration for 1923-1924 was 307 graduates 80. The thirty second session begins Sept. 29, 1924 and ends June 9, 1925.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE AND THE COLLEGE OF PHYSICIANS AND SURGEONS. Lombard and Greene Streets—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged into it in 1913. In 1915 the College of Physicians and Surgeons was merged and the present name assumed. The faculty consists of 90 professors and 130 instructors and assistants a total of 220. Two years of college work are required for admission. The course covers four years of eight months each. The total fees are \$270 each year for residents of the state \$320 each year for nonresidents. The Dean is Dr. J. M. H. Rowland. Total registration for 1923-1924 was 340 graduates 78. The one hundred and eighteenth session begins Sept. 29, 1924, and ends June 6, 1925.

MASSACHUSETTS

Massachusetts, population 3,852,356, has five medical colleges. Medical School of Harvard University, Boston University School of Medicine, Tufts College Medical School, College of Physicians and Surgeons and the Middlesex College of Medicine and Surgery. They are all situated in Boston, a city of 748,060 except the last named, which is in Cambridge, a city of 109,694.

Boston

MEDICAL SCHOOL OF HARVARD UNIVERSITY. 240 Longwood Avenue—Organized in 1782. The first class graduated in 1788. It has a faculty of 87 professors and 218 instructors and assistants, a total of 305. Candidates for admission must present a college degree or two years of work leading to such a degree with standing in the upper third of the class. The college work must include a year of physics biology general chemistry a half year of organic chemistry and a reading knowledge of French or German. The total fee for each of the four years is \$300 plus \$5 the first year for matriculation. The Dean is Dr. David L. Folsall. The total registration for 1923-1924 was 494 graduates 122. The one hundred and forty second session begins Sept. 22, 1924 and ends June 18, 1925.

BOSTON UNIVERSITY SCHOOL OF MEDICINE. 80 East Concord Street—Organized in 1873. In 1874 the New England Female Medical College, founded in 1848 was merged into it. The first class graduated in 1874. Became nonsectarian in 1918. Two years of collegiate work are required for admission. The faculty includes 22 professors 77 associates etc. making a total of 99. The course covers four years of thirty six weeks each. Total fees for each of the four years respectively are \$281, \$281 \$256 and \$266. The Dean is Dr. Alexander S. Begg. Total registration for 1923-1924 was 208 graduates 46. The fifty second session begins Sept. 22, 1924 and ends June 15, 1925.

TUFTS COLLEGE MEDICAL SCHOOL. 416 Huntington Avenue—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. It has a faculty of 49 professors and 107 assistants lecturers etc. a total of 156. Two years of collegiate work are required for admission. The course covers four years of eight months each. The total fees for each of the four years are \$260 \$245 \$235 and \$240. The Dean is Dr. Stephen Rushmore. Total registration for 1923-1924 was 507 graduates 136. The twenty ninth session begins Sept. 23, 1924, and ends May 29, 1925.

COLLEGE OF PHYSICIANS AND SURGEONS. 517 Shawmut Avenue—Organized in 1880. The first class graduated in 1882. Total attendance of medical students 1923-1924 was about 26. There were about 7 graduates. This college has been reported not recognized by the Massachusetts Medical Society and by the licensing boards of forty five states.

Cambridge

MIDDLESEX COLLEGE OF MEDICINE AND SURGERY. Cambridge—Organized in 1914 under the charter of the Worcester Medical College which became extinct in 1859. A class was graduated in 1915 and each subsequent year. Was closely related in its interests with an osteopathic college and granted a liberal advanced standing for work done in osteopathic colleges. During 1923-1924 the total enrollment was 117 graduates 28. This college has been reported as not recognized by licensing boards of forty six states. In connection with the recent medical license investigation in Connecticut a drastic report in regard to this college was issued by the Special Grand Jury.

MICHIGAN

Michigan, population 3,668,412, has two medical colleges, the University of Michigan Medical School, located at Ann Arbor, a city of 19,516 people, and the Detroit College of Medicine and Surgery, located at Detroit, a city of 993,678 inhabitants.

Students who desire to practice medicine in Michigan, in addition to an accredited four-year high school education, must complete two years of work in an approved college of

liberal arts, including college courses in physics, chemistry, biology and French or German, prior to beginning the study of medicine. Candidates must also have completed an internship in a hospital.

Ann Arbor

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL—Organized in 1950 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1951. Present title assumed in 1915. It has a faculty composed of 23 professors, 17 assistant and associate professors and 100 associates, instructors, etc., a total of 140. The entrance requirements are two years of college work including courses in chemistry, physics and biology with laboratory work and a reading knowledge of one modern language. The curriculum embraces four years of nine months each. The total fees for Michigan students are for men \$220 per year and for women \$215 per year plus a matriculation fee of \$17.50 for nonresidents \$80 per year additional. The matriculation fee for nonresidents is \$25. The Dean is Dr. Hugh Cabot. The total registration for 1923-1924 was 597 graduates 138. The seventy-fifth session begins Sept. 23, 1924, and ends June 15, 1925.

Detroit

DETROIT COLLEGE OF MEDICINE AND SURGERY 1516 St. Antoine St.—Organized as the Detroit College of Medicine in 1885 by consolidation of Detroit Medical College, organized in 1868 and the Michigan College of Medicine organized in 1880. Reorganized with present title in 1913. The first class graduated in 1886. In 1918 it became a municipal institution under the control of the Detroit Board of Education. Entrance requirements are two years of college work. The faculty embraces 21 professors, 95 lecturers, etc., a total of 116. The course covers four years of nine months each and a fifth hospital intern year. The total fees each year for residents of Detroit are \$145 for nonresidents \$200. The Dean is Dr. W. H. MacCracken. The total registration for 1923-1924 was 191 graduates 25. The fortieth session begins Sept. 29, 1924, and ends June 20, 1925.

MINNESOTA

Minnesota, population 2,387,125, contains one medical school, the University of Minnesota Medical School situated in Minneapolis, a city of 380,582 inhabitants.

Students intending to practice medicine in Minnesota, in addition to an accredited four-year high school education, must complete two years of college work the equivalent of that done in the liberal arts department of the University of Minnesota, including courses in physics, chemistry and biology, prior to beginning the study of medicine.

Minneapolis

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL—Organized in 1883 as the University of Minnesota College of Medicine and Surgery reorganized in 1883 by absorption of St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883 was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. The faculty includes 128 professors and 152 instructors and assistants a total of 280. The curriculum covers four years of nine months each and a year's internship in an approved hospital. The school is operated on the four quarter plan. The entrance requirements are two years of university work which must include six semester credits of rhetoric, eight semester credits of physics, thirteen credits of general chemistry qualitative and quantitative analysis and organic chemistry, eight credits of zoology, and a reading and qualitative knowledge of French or German. Students are required to secure a degree of B.S. or A.B. before receiving the degree of Bachelor of Medicine (M.B.) which is granted at the end of the four year course. The M.D. is conferred after a year of intern work or of advanced laboratory work has been completed. Classes are graduated twice a year in June and in December. Total fees are \$202 for residents and \$232 for nonresidents each year of three quarters. The Dean is Dr. E. P. Lyon. The total registration for 1923-1924 was 411 graduates 58. The thirty-sixth session begins Sept. 29, 1924 and ends June 15, 1925. The summer quarter began June 24.

MISSISSIPPI

Mississippi, population 1,790,618, has one medical college, the Department of Medicine of the University of Mississippi, which is located at Oxford, a city of 2,150 inhabitants.

Students desiring to practice medicine in Mississippi, in addition to a standard four-year high school education, must complete two years of work in an approved college or university, including courses in physics, chemistry, biology and a modern language, before entering on the study of medicine.

Oxford

UNIVERSITY OF MISSISSIPPI SCHOOL OF MEDICINE—Organized in 1903. Gives only the first two years of the medical course. In 1908 a clinical department was established at Vicksburg but was discontinued in 1910 after graduating one class. The session extends over eight and a half months. Entrance requirements are two years of collegiate work. The total fees each year are \$168. The faculty numbers 18. The Dean is Dr. J. O. Crider. The total registration for 1923-1924 was 68. The twenty-second session begins Sept. 17, 1924 and ends June 2, 1925.

MISSOURI

Missouri, population 3,404,055, has six medical colleges. The School of Medicine of the University of Missouri is at Columbia, a town of 10,392 people. St. Louis, population 772,897, contains three medical schools, viz., the School of Medicine of St. Louis University, Washington University Medical School, and the St. Louis College of Physicians and Surgeons. Kansas City, which, with Kansas City, Kansas, has a population of 433,261, has two colleges, the Kansas City College of Medicine and Surgery and the Kansas City University of Physicians and Surgeons. The last three are reported as not approved or reputable by the Missouri State Board of Health.

Columbia

UNIVERSITY OF MISSOURI SCHOOL OF MEDICINE—Organized at St. Louis in 1845 was discontinued in 1855 but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. The faculty includes 11 professors and 15 assistant professors, lecturers, etc., a total of 26. The course covers two years of thirty-six weeks each. The entrance requirements are two years of college work including French or German 8 hours general zoology 8 hours physics 8 hours inorganic chemistry 8 hours organic chemistry 5 hours and general bacteriology 3 hours. Total fees are \$106 for each year. Nonresidents of the state pay \$10 per term extra. The Dean is Dr. Guy L. Noyes. Total registration for 1923-1924 was 77. The next session begins Sept. 10, 1924 and ends June 3, 1925.

Kansas City

KANSAS CITY COLLEGE OF MEDICINE AND SURGERY Twenty Third and Holmes Streets—Organized in 1915 as an offshoot of the Eclectic Medical University. A Class C medical school now extinct. It claims to be an eclectic college but is reported not recognized as such by the National Eclectic Medical Association. For 1923-1924 only 17 students were reported these having been listed as graduates. Since this school is an offshoot of a Class C medical college and is reported not recognized by the Missouri State Board of Health and by the licensing boards of forty-two other states no higher rating can be granted to it pending an inspection which it has refused. Was closely involved in the Missouri diploma mill scandal as shown by the drastic report regarding it issued by the Connecticut Special Grand Jury, March 14, 1924.

KANSAS CITY UNIVERSITY OF PHYSICIANS AND SURGEONS 729 Troost Street—Originally chartered in 1903 as the Central College of Osteopathy, charter amended in 1917 by which it obtained the right to grant degrees in medicine and the name was changed to the Central College Medical Department. Present title in 1918. Very liberal advanced standing allowed for work done in osteopathic colleges reported as still having osteopathic classes. Total enrollment in 1923-1924 was 34 graduates 21. The Dean is Dr. A. M. Wilson. The next session begins Sept. 9, 1924 and ends May 28, 1925. Rated in Class C by the Council on Medical Education and Hospitals. Reported not recognized by the licensing boards of Missouri and of forty-seven other states.

St. Louis

WASHINGTON UNIVERSITY SCHOOL OF MEDICINE Kingshighway and Euclid Avenue—Organized in 1842 as the Medical Department of St. Louis University. In 1835 it was chartered as an independent institution under the name of St. Louis Medical College. The first class graduated in 1843. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. The faculty comprises 40 professors and 125 lecturers, instructors, etc., a total of 165. Two years of college work are required for admission including courses in English, physics, chemistry and biology and a reading knowledge of German or French. The course is four years of eight months each. The total fees for the four years are respectively \$315 \$310 \$310 and \$315. The Dean is Dr. McKim Marriott. The total registration for 1923-1924 was 291 graduates 77. The next session begins Sept. 25, 1924 and ends June 11, 1925.

ST. LOUIS UNIVERSITY SCHOOL OF MEDICINE 1402 South Grand Avenue—Organized in 1901 as the Marion Sims Beumont Medical College by union of Marion Sims Medical College organized in 1890 and Beaumont Hospital Medical College organized in 1886. First class graduated in 1902. It became the Medical Department of St. Louis University in 1903. The faculty is composed of 76 professors and 127 lecturers and assistants a total of 203. Two years of collegiate work are required for admission. The curriculum covers four years of thirty-two weeks each. The summer session is optional. The total fees are \$300 each year. The Dean is Dr. Hanau W. Loeb. The total registration for 1923-1924 was 432 graduates, 94. The next session begins Oct. 1, 1924, and ends May 31, 1925.

ST. LOUIS COLLEGE OF PHYSICIANS AND SURGEONS Jefferson and Gamble Streets—Organized in 1869. Classes graduated in 1870 and each subsequent year until 1873 when it suspended. Reorganized in 1879. Classes graduated in 1880 and subsequent years until 1915 when it merged with the Medical Department of the National University of Arts and Sciences. Reestablished in 1916. Registration during 1923-1924 was approximately 19 graduates about 8. This college is reported as not recognized by the licensing boards of Missouri and forty-six other states. This school was closely involved in the Missouri diploma mill scandal as shown by the drastic report regarding it issued by the Connecticut Special Grand Jury, March 14, 1924.

NEBRASKA

Nebraska, population 1,296,372, has two medical colleges, the University of Nebraska College of Medicine and the Creighton University College of Medicine, both in Omaha, population 191,601

Omaha

CREIGHTON UNIVERSITY COLLEGE OF MEDICINE, Fourteenth and Davenport Streets—Organized in 1892 as the John A. Creighton Medical College. Present title in 1921. The first class graduated in 1893. It has a faculty of 35 professors and 38 instructors, lecturers and assistants, a total of 73. Two years of collegiate work are required for admission. The course of study embraces four years of eight months each. The total fees each year for the four years are respectively, \$195 \$190 \$190 and \$200. The Dean is Dr. Hermann von W. Schulte. Total registration for 1923-1924 was 164 graduates, 38. The forty-third session begins Sept. 24, 1924, and ends June 6, 1925.

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE, Forty Second Street and Dewey Avenue—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska with the present title. The first two years were given at Lincoln and the last two in Omaha until 1913, when all four years were transferred to Omaha. The faculty is composed of 45 professors and 53 lecturers and instructors, total 98. Two years of collegiate work are required for admission, including courses in physics, chemistry and zoology. The fees for each of the four years respectively are \$180 \$170 \$160 and \$160. The Dean is Dr. Irving S. Cutter. Total registration for 1923-1924 was 321 graduates, 52. The next session begins Sept. 15, 1924, and ends June 6, 1925.

NEW HAMPSHIRE

New Hampshire, population 443,083, has one medical college, located at Hanover, population 1,551.

Students desiring to practice medicine in New Hampshire, in addition to a four-year high school education, must complete at least two years of work in an approved college of liberal arts, prior to beginning the study of medicine.

DARTMOUTH MEDICAL SCHOOL—Organized as New Hampshire Medical Institute in 1797. The first class graduated in 1798. It is under the control of the trustees of Dartmouth College. Clinical teaching was discontinued in 1914. The faculty is made up of 11 professors and 2 instructors, a total of 13. Three years of collegiate work are required for admission. The course covers nine calendar months in each year or eight months of actual teaching. Candidates for the A.B. or B.S. degree in Dartmouth College may substitute the work of the first year in medicine for that of the senior year in the academic department. The fees for each year are \$300. Dean Dr. John M. Gile. The total registration for 1923-1924 was 44. The next session opens Sept. 17, 1924, and ends June 23, 1925.

NEW YORK

New York State, population 10,384,829, has eight medical colleges. Five of these, College of Physicians and Surgeons (Columbia University), Cornell University Medical College, the University and Bellevue Hospital Medical College, Long Island College Hospital and the New York Homeopathic Medical College and Flower Hospital, are located in New York City, population 5,620,048. Albany Medical College is located in Albany, a city of 113,344 people. The University of Buffalo Medical Department is situated in Buffalo, population 506,775. The College of Medicine, Syracuse University, is in Syracuse, a city of 171,717 inhabitants. The new medical school of the University of Rochester will be open for medical students in the Fall of 1925.

Students who desire to practice in New York must complete two years of college work before entering on the study of medicine.

Albany

ALBANY MEDICAL COLLEGE, 58 64 Eagle Street—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915 Union University assumed educational control. The faculty is composed of 25 professors and 77 instructors, assistants, etc., a total of 102. Two years of collegiate work, including college courses in physics, chemistry (including organic and analytical), biology, English and a modern foreign language are required for admission. The curriculum covers four years of eight months each. The total fees for the four years respectively are \$320 \$305 \$305 and \$305. The Dean is Dr. Thomas Ordway. The total registration for 1923-1924 was 89 graduates, 18. The ninety-fourth session begins Sept. 22, 1924, and ends June 8, 1925.

Buffalo

UNIVERSITY OF BUFFALO MEDICAL DEPARTMENT, High Street near Main—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. The faculty is composed of 54 professors and 91 lecturers, assistants, etc., a total of 145. Two years of collegiate work, including college courses in physics, chemistry, biology, English and French or German are

required for admission. The course covers four years of eight months each. The total fees for each of the four years are \$322 \$317 \$317 and \$327. The Dean is Dr. C. Sumner Jones. Total registration for 1923-1924 was 244 graduates, 61. The seventy-ninth session begins Sept. 22, 1924, and ends June 10, 1925.

New York

COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS, 437 West Fifty-Ninth Street—Organized in 1807 by the regents of the University of the State of New York as their medical department. The first class graduated in 1811. In 1860 it became by affiliation the Medical Department of Columbia College. It was made a permanent part of Columbia College by legislative enactment in 1891. That institution became Columbia University in 1896. The faculty is composed of 105 professors and 211 instructors, demonstrators, etc., a total of 316. Two years of collegiate work of 72 points, including courses in physics, chemistry, biology, English and either French or German are required for admission. The work covers four years of eight months each. The Dean is Dr. William Darrach. The total fees for the four years respectively are \$332 \$332 \$332 and \$352. Total registration for 1923-1924 was 377 graduates, 88. The one hundred and seventeenth session begins Sept. 24, 1924, and ends June 3, 1925.

CORNELL UNIVERSITY MEDICAL COLLEGE, First Avenue and Twenty-Eighth Street, New York City and Ithaca—Organized in 1898. The first class was graduated in 1899. The work of the first year may be taken either in Ithaca or in New York. The faculty is composed of 73 professors and 110 assistants, lecturers, instructors, etc., a total of 183. All candidates for admission must be graduates of approved colleges or scientific schools or seniors of approved colleges which will permit them to substitute the first year of this medical school for the fourth year of their college course and will confer on them the Bachelor degree on the completion of the year's work. The candidate must also have a knowledge of physics, chemistry, biology, English and a modern language. The fees for each of the four years are respectively \$345 \$335 \$335 and \$350. The Dean is Dr. Walter L. Niles. Total registration for 1923-1924 was 230 graduates, 58. The twenty-seventh session begins Sept. 24, 1924, and ends June 11, 1925.

LONG ISLAND COLLEGE HOSPITAL, 350 Henry Street, Brooklyn—Organized in 1858. The first class graduated in 1860. It has a faculty of 71 professors and 88 assistants, instructors, etc., a total of 159. Two years of collegiate work, including college courses in physics, chemistry and biology are required for admission. The course covers four years of eight months each. The fees for the four years respectively are \$366 \$356 \$381 and \$386. The Dean is Prof. Adam M. Miller. Total registration for 1923-1924 was 357 graduates, 48. The sixty-seventh session begins Sept. 22, 1924, and ends May 28, 1925.

NEW YORK HOMEOPATHIC MEDICAL COLLEGE and FLOWER HOSPITAL, Eastern Boulevard between Sixty-Third and Sixty-Fourth Streets—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title New York Homeopathic Medical College was assumed in 1869. Present title assumed in 1908. The first class graduated in 1861. The course covers four years of eight months each. It has a faculty of 29 professors and 57 lecturers and assistants, a total of 86. The total fees for the four years are respectively \$360 \$350 \$350 and \$380. The Dean is Israel S. Kleiner, Ph.D. Total registration for 1923-1924 was 169 graduates, 29. The sixty-fifth session begins Sept. 19, 1924, and ends June 2, 1925.

UNIVERSITY and BELLEVUE HOSPITAL MEDICAL COLLEGE, 338 East Twenty-Sixth Street—Organized in 1898 by the union of the New York University Medical College, organized in 1841 and the Bellevue Hospital Medical College, organized in 1861. It is the Medical Department of New York University. First class graduated in 1899. The faculty is composed of 84 professors, associate professors and assistant professors and 135 lecturers, instructors, etc., in all 219. The course covers four years of eight months each. Entrance requirements are 72 semester hours of collegiate work in a registered college leading to a bachelor's degree, including courses in physics, chemistry and biology. The fees for each of the four years respectively are \$372 \$374 \$329 and \$347. The Dean is Dr. Samuel A. Brown. Total registration for 1923-1924 was 428 graduates, 101. The next session begins Sept. 17, 1924, and ends June 10, 1925.

Syracuse

SYRACUSE UNIVERSITY COLLEGE OF MEDICINE, 307 311 Orange Street—Organized in 1872 when the Geneva Medical College, chartered in 1834, was removed to Syracuse under the title The College of Physicians and Surgeons of Syracuse University. Present title assumed in 1875 when a compulsory three-year graded course was established. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. The faculty is composed of 31 professors and 85 associate and assistant professors, lecturers and instructors, a total of 116. Two years of a recognized college course are required for admission. The course covers four years of thirty-four weeks each. The fees for each of the first three years are \$340 for the fourth year \$350. The Dean is Dr. Herman G. Weiskotten. The total enrollment for 1923-1924 was 181 graduates, 38. The fifty-fourth session begins Sept. 22, 1924, and ends June 15, 1925.

NORTH CAROLINA

North Carolina, population 2,559,123, has two medical schools, each of which gives only the first two years of the medical course. The School of Medicine of the University of North Carolina is located at Chapel Hill, population 1,483. Wake Forest College School of Medicine is at Wake Forest, population 1,425.

Students intending to practice medicine in North Carolina must complete two years of college work including courses in physics, chemistry and biology in addition to 14 units of high school work before beginning the study of medicine

Chapel Hill

UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department at Raleigh. The first class graduated in 1903. A class was graduated each subsequent year including 1910 when the clinical department at Raleigh was discontinued. Two years of collegiate work are required for admission. The faculty is composed of 9 professors and 4 lecturers-assistants etc. a total of 13. The fees for each year are \$195. The Dean is Dr. I. H. Minniss. The total registration for 1923-1924 was 69. The thirty-ninth session begins Sept. 18, 1924, and ends June 5, 1925.

Wake Forest

WAKE FOREST COLLEGE SCHOOL OF MEDICINE—This school was organized in 1902. The faculty including the professors of chemistry, physics and biology, numbers 10 professors and 6 assistants. Only the first two years of the medical course are offered. After the completion of freshman and sophomore college work and two years of medicine a certificate will be given. The B.S. degree in medicine will be given only after completion of three years of college work and two years of medicine. Each annual course extends over nine months. The fees for each year aggregate \$200. The Dean is Dr. Thurman D. Kitchen. The total registration for 1923-1924 was 63. The twenty-third session begins Sept. 16, 1924, and ends June 5, 1925.

NORTH DAKOTA

North Dakota, population 645,680, has one medical college, the School of Medicine of the University of North Dakota, which is situated at University, a suburb of Grand Forks, a city of 14,010 people. It gives only the first two years of the medical course.

Students intending to practice medicine in North Dakota in addition to a four-year high school education, must complete two years of work in an approved college of liberal arts including courses in Latin, physics, chemistry, botany and zoology, prior to beginning the study of medicine, and must show evidence of having spent at least one year as an intern in a hospital.

University

UNIVERSITY OF NORTH DAKOTA SCHOOL OF MEDICINE—Organized in 1905. Offers only the first two years of the medical course. Two years work in a college of liberal arts is required for admission. The fees are about \$50 each year. The faculty consists of 7 professors and 8 instructors a total of 15. The Dean is Dr. Harley E. French. The total registration for 1923-1924 was 36. The nineteenth session begins Sept. 20, 1924, and ends June 9, 1925.

OHIO

Ohio, population 5,759,394, has four medical colleges. Two of these, the Medical College of the University of Cincinnati and the Eclectic Medical College, are located in Cincinnati, a city of 401,247 inhabitants. Cleveland, population 796,841, contains one medical school, Western Reserve University School of Medicine. Columbus, population 237,031, contains the Ohio State University College of Medicine.

Cincinnati

UNIVERSITY OF CINCINNATI COLLEGE OF MEDICINE Eden Avenue Cincinnati General Hospital—Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement March 2, 1909, the Miami Medical College also merged into the University when the title of Ohio Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. Two years of college work are required for admission. The faculty consists of 76 professors and 40 associate assistants etc. a total of 116. The course covers four years of eight months each. The fees for each of the four years respectively are \$320 \$320 \$320 and \$270. The Dean is Dr. Henry Page. The total registration for 1923-1924 was 237 graduates, 64. The next session begins Sept. 22, 1924, and ends June 12, 1925.

ECLECTIC MEDICAL COLLEGE 630 West Sixth Street—Organized in 1833 at Worthington as the Worthington Medical College. Removed to Cincinnati in 1843. In 1845 it was chartered as the Eclectic Medical Institute. In 1857 the American Medical College organized in 1839 was merged into it and in 1859 the Eclectic College of Medicine and Surgery organized in 1856 was merged into it. In 1910 it assumed its present title. Classes were graduated in 1833 and in all subsequent years except 1839 to 1843 inclusive. It has a faculty of 29 professors and 23 lecturers and assistants a total of 52. Two years of college work are required for admission. The course covers four years of eight months each. The total fees for the four years respectively are \$170 \$160 \$160 and \$160. The Dean is Dr. R. L. Thomas. Total registra-

tion for 1923-1924 was 127 graduates. 27. The next session begins Sept. 18, 1924, and ends May 18, 1925.

Cleveland

WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE 2109 15 Adelbert Road—Organized in 1843 as the Cleveland Medical College. The first class graduated in 1844. It assumed the present title in 1881. In 1910 the Cleveland College of Physicians and Surgeons was merged. The faculty includes 18 professors and 148 lecturers-assistants etc. a total of 166. The curriculum embraces three years of eight and one-half months each and one year of eleven months. Three years of college work are required for admission. The total fees for each of the four years are respectively \$275 \$265 \$250 and \$260. The Dean is Dr. C. A. Hamman. The total registration for 1923-1924 was 191 graduates. 42. The eighty-second session begins Sept. 25, 1924, and ends June 18, 1925.

Columbus

OHIO STATE UNIVERSITY COLLEGE OF MEDICINE 710 North Park Street—Organized in 1907 as the Starling Ohio Medical College by the union of Starling Medical College (organized 1847) with the Ohio Medical University (organized 1890). In 1914 it became an integral part of the Ohio State University with its present title. The faculty consists of 45 professors and 60 lecturers-demonstrators etc. a total of 105. Two years of collegiate work are required for admission. The course covers four years of 34 weeks each. Tuition fees are \$153 each year for residents of Ohio for nonresidents the fees are \$258. The Dean is Dr. Eugene F. McCampbell. The total registration for 1923-1924 was 280 graduates. 46. The next session begins Sept. 30, 1924, and ends June 16, 1925.

OKLAHOMA

Oklahoma, population 2,026,263 has one medical college the School of Medicine of the University of Oklahoma. The work of the first and second years is given on the academic campus at Norman, a city of about 5,004 inhabitants. The work of the third and fourth years is given in Oklahoma City which has a population of 91,295 and which is eighteen miles north of Norman.

Students intending to practice medicine in Oklahoma in addition to a four-year high school education must complete two years of work in an approved college of liberal arts including courses in physics, chemistry, biology and a modern language prior to beginning the study of medicine.

Norman and Oklahoma City

UNIVERSITY OF OKLAHOMA SCHOOL OF MEDICINE—Organized in 1900. Gave only the first two years of the medical course at Norman until 1910, when a clinical department was established at Oklahoma City. The first class graduated in 1911. It has a faculty of 6 professors and associate professors 67 assistant professors and instructors a total of 73. Two years of college work are required for admission. The course is four years of nine months each. An optional course of six years is offered for the degrees of B.S. and M.D. The total fees for the four years are respectively \$100 \$100 \$21 and \$21. The Dean is Dr. LeRoy Long. School of Medicine Building Third and Stiles Street Oklahoma City, Okla. The total registration for 1923-1924 was 148 graduates. 21. The twenty-fifth session begins Sept. 15, 1924, and ends June 9, 1925.

OREGON

Oregon, population 783,389, has one medical college the University of Oregon Medical School, located in Portland a city of 258,288 population.

Portland

UNIVERSITY OF OREGON MEDICAL SCHOOL Marquam Hill—Organized in 1887. The first class graduated in 1888 and a class graduated each subsequent year except 1898. The Willamette University Medical Department was merged in 1913. It has a faculty of 53 professors and 85 lecturers-assistants etc. a total of 138. Entrance requirements are three years of college work or its equivalent. The course is four years of thirty-four weeks each. The total fees for the four years are respectively \$185 \$180 \$180 and \$180 for residents of Oregon and \$60 per year additional for nonresidents. The Dean is Dr. Richard B. Dillehunt. The total registration for 1923-1924 was 193 graduates. 41. The thirty-eighth session begins Sept. 30, 1924, and ends June 15, 1925.

PENNSYLVANIA

Pennsylvania, population 8,720,017, has six medical colleges. Of these, Philadelphia having a population of 1,823,779, contains five, as follows: University of Pennsylvania School of Medicine, Jefferson Medical College, Hahnemann Medical College and Hospital, Woman's Medical College of Pennsylvania and Temple University Department of Medicine. The other school, the School of Medicine of the University of Pittsburgh, is situated in Pittsburgh, a city of 588,343.

Students intending to practice medicine in Pennsylvania, in addition to a four-year high school education, must complete a year's work in an approved college of liberal arts, including

college courses in physics, chemistry and biology before beginning the study of medicine. They must also have completed an internship of at least one year in an approved hospital

Philadelphia

UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE Thirty Sixth Street and Hamilton Walk—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772-1779 inclusive. The original title was the Department of Medicine College of Philadelphia. The present title School of Medicine of the University of Pennsylvania was adopted in 1909. It granted the first medical diploma issued in America. In 1916 it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school. The faculty consists of 63 professors, associate and assistant professors and 161 lecturers, associates, instructors, etc., a total of 224. All candidates for admission must be graduates of approved colleges or scientific schools or seniors of approved colleges which will permit them to substitute the first year of this medical school for the fourth year of their college course and will confer on them the Bachelor degree on the completion of the year's work. The candidate must also present evidence that a sufficient amount of work has been completed in physics, biology or zoology, chemistry, including general inorganic, organic and analytical, English and French or German. The first class is limited to 110 students, third and fourth to 135 each. The course embraces four years of study of thirty-three weeks each. The total fees for each of the four years are respectively \$333, \$325, \$325 and \$329 for men and \$15 less per year for women students. The Dean is Dr. William Pepper. Total registration for 1923-1924 was 474 graduates, 132. The one hundred and fifty-ninth session begins Sept. 25, 1924 and ends June 17, 1925.

JEFFERSON MEDICAL COLLEGE Tenth and Walnut Streets—Organized in 1825 with its present title as the Medical Department of Jefferson College, Cannonsburg, Pa. Classes have been graduated annually since 1826. In 1838 a separate university charter was granted without change of title since which time it has continued under the direction of its own board of trustees. It has a faculty of 45 professors, associate and assistant professors and 130 associates, lecturers, demonstrators and instructors, a total of 175. Entrance requirements are a completed standard four-year high school or college preparatory course or the equivalent and in addition two years of work leading to a degree in an approved college of arts and science amounting to at least 60 semester hours including specified courses in physics, general and organic chemistry and biology with laboratory work in each subject. The course of study covers four years of eight and a half months each. The fees are about \$325 each year with a matriculation fee of \$10 paid on admission. The Dean is Dr. Ross V. Patterson. The total registration for 1923-1924 was 593 graduates, 145. The one hundredth session begins Sept. 23, 1924 and ends June 5, 1925.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA Twenty First and N. College Avenue—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. It has a faculty of 17 professors and 50 assistants, lecturers, etc., in all 67. Entrance requirements are a completed course in a standard secondary school and in addition two years of collegiate work including courses in physics, chemistry, biology and French or German. The curriculum covers four years of eight months each. Fees for each of the four years are respectively \$275, \$279, \$277 and \$269. The Dean is Dr. Martha Tracy. The total registration for 1923-1924 was 110 graduates, 32. The seventy-fifth session begins Sept. 24, 1924 and ends June 3, 1925.

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF PHILADELPHIA 220 24 North Broad Street—Organized in 1848 as the Homeopathic Medical College of Pennsylvania. In 1869 it united with the Hahnemann Medical College of Philadelphia taking the latter title. Assumed present title in 1885. The first class graduated in 1849. Entrance requirements are a completed course in a standard secondary school and in addition two years devoted to a college course including English and either French, German or Spanish, physics, chemistry and biology. It has a faculty of 52 professors and 62 lecturers, instructors, etc., in all 114. The work covers four years of eight and a half months each. Total fees are \$260 each year. The Dean is Dr. William A. Pearson. The total registration for the college year 1923-1924 was 210 graduates, 45. The seventy-seventh session begins Sept. 30, 1924 and ends June 4, 1925.

THE TEMPLE UNIVERSITY SCHOOL OF MEDICINE Eighteenth and Buttonwood Streets—Organized in 1901. The first class graduated in 1904. The faculty numbers 20 professors and 115 associates, assistants, etc., a total of 135. Two years of college work are required for admission. The fees for each of the four years respectively are \$230, \$225, \$215 and \$215. The Dean is Dr. Frank C. Hammond. The total registration for 1923-1924 was 184 graduates, 15. The twenty-fourth session begins Sept. 22, 1924, and ends June 18, 1925.

Pittsburgh

UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE Bigelow Boulevard—Organized in 1886 as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh removing to the university campus in 1910. The first class graduated in 1887. The faculty is composed of 17 professors and 133 associates, assistants, etc., 150 in all. Entrance requirements are two years of college work including English, chemistry (inorganic and organic), physics, biology and a reading knowledge of French or German, Italian or Spanish. The course of study is four years of eight and a half months each. The total fees for the four years respectively are \$327.50, \$312.50, \$312.50 and \$322.50. The Dean is Dr. Raleigh R. Huggins. The total registration for 1923-1924 was 212 graduates, 36. The thirty-ninth session begins Sept. 29, 1924 and ends June 10, 1925.

SOUTH CAROLINA

South Carolina, population 1,683,724, has one medical college, situated in Charleston, a city of 67,957 people.

Students intending to practice medicine in South Carolina must complete, in addition to 14 units of high school work, two years in an approved college including courses in English, physics, chemistry and biology.

Charleston

THE MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA 16 Lucas Street—Organized in 1823 as the Medical College of South Carolina. The first class graduated in 1825. In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they were merged in 1838. Classes were graduated in all years except 1862 to 1865 inclusive. In 1913 by legislative enactment it became a state institution. It has a faculty of 35 professors and 33 lecturers, instructors, etc., a total of 68. The course covers four years of eight months each. Two years of collegiate work including courses in physics, chemistry, biology and a modern foreign language are required for admission in addition to a standard high school preparation. The total fees are \$165 annually. The Dean is Dr. Robert Wilson Jr. Total enrollment for 1923-1924 was 147 graduates, 28. The ninety-sixth session begins Sept. 25, 1924 and ends June 4, 1925.

SOUTH DAKOTA

South Dakota, population 636,547, has one medical college, the University of South Dakota College of Medicine, located at Vermilion, a town of 2,590 people.

Students intending to practice medicine in South Dakota must show that they matriculated in and graduated from medical colleges which required at least two years of collegiate work for admission, including courses in physics, chemistry, biology and a modern language. Beginning in 1925, a year's internship in an approved hospital will also be required.

Vermilion

UNIVERSITY OF SOUTH DAKOTA COLLEGE OF MEDICINE—Organized in 1907. Offers only the first two years of the medical course. Two years work in a college of liberal arts are required for admission. The fees are \$60 each year. The faculty numbers 11. The Dean is Christian P. Lommen, B.S. The total registration for 1923-1924 was 36. The eighteenth session begins Sept. 18, 1924, and ends June 13, 1925.

TENNESSEE

Tennessee, population 2,337,885, has three medical colleges. Of these, Vanderbilt University School of Medicine and Meharry Medical College are situated in Nashville, a city with a population of 118,342. The College of Medicine of the University of Tennessee is located in Memphis, population 162,351.

Students intending to practice medicine in Tennessee must complete two years of collegiate work including courses in physics, chemistry, biology and a modern language in addition to a four-year high school course, before entering on the study of medicine.

Memphis

UNIVERSITY OF TENNESSEE COLLEGE OF MEDICINE three buildings 879 Madison Avenue—Organized in 1876 at Nashville as Nashville Medical College. First class graduated 1877 and a class graduated each subsequent year. Became Medical Department of University of Tennessee in 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor. In 1911 it moved to Memphis where it united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913. Lincoln Memorial University Medical Department was merged in 1914. The faculty includes 53 professors and 85 assistants, instructors, etc., a total of 138. Entrance requirements are a high school education plus two years of collegiate work. Students taking the two-year premedical course in Knoxville may secure the B.S. and M.D. degrees. The total fees for the four years respectively are \$107, \$102, \$102 and \$127 for residents of the state and \$100 more each year for nonresidents. The Dean is Dr. James B. McElroy. Total registration for 1923-1924 was 209 graduates, 47. The next session begins Sept. 27, 1924, and ends June 8, 1925.

Nashville

VANDERBILT UNIVERSITY SCHOOL OF MEDICINE—This school was founded in 1874. The first class graduated in 1875. The faculty consists of 23 professors and 86 lecturers, a total of 109. Two years of collegiate work is required for admission. The course covers four years of nearly nine months each. The total fees for the four years respectively are \$200, \$200, \$200 and \$225. The Acting Dean is Dr. Lucius E. Burch. The total registration for 1923-1924 was 192 graduates, 49. The fifty-first session begins Sept. 24, 1924, and ends June 10, 1925.

MEMPHIS MEDICAL COLLEGE Colored 1118 First Avenue South.—This school was organized in 1876 as the Medical Department of Central Tennessee College which became Walden University in 1900. First class graduated in 1977. Obtained new charter independent of Walden University in 1916. The faculty is made up of 20 professors and 24 instructors, demonstrators, lecturers, etc., 44 in all. The work embraces four years of thirty-one weeks each. The total fees for the four years respectively, are \$162, \$152, \$155 and \$175. The President is Dr. John J. Mullooney. Total registration for 1923-1924 was 172 graduates. 38. The forty-ninth session begins Oct. 1, 1924 and ends May 21, 1925.

TEXAS

Texas population 4,663,228, has two medical colleges. The University of Texas School of Medicine is located at Galveston, a city of 44,255 inhabitants. The Baylor University College of Medicine is located in Dallas population 158,976.

Students intending to practice medicine in Texas must complete at least a year of collegiate work, including courses in physics, chemistry, biology and modern language, in addition to a standard four-year high school course before entering on the study of medicine. Beginning in 1926, two years of preliminary college work will be required.

Dallas

BAYLOR UNIVERSITY COLLEGE OF MEDICINE 720 College Avenue.—Organized in 1900 as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University. It acquired the charter of Dallas Medical College in 1904. The first class graduated in 1901. The faculty consists of 44 professors and 51 instructors and assistants, a total of 95. Entrance requirements are two years of college work in addition to a four-year high school education. The course is four years of eight months each. The fees for each of the four years respectively are \$208, \$198, \$183 and \$188. The Dean is Dr. Walter H. Moursund. Total registration for 1923-1924 was 201 graduates. 19. The twenty-fifth session begins Sept. 29, 1924, and ends June 1, 1925.

Galveston

UNIVERSITY OF TEXAS SCHOOL OF MEDICINE Avenue B, between Ninth and Tenth Streets.—Organized in 1891. The first class graduated in 1892. It has a faculty of 12 professors and 38 lecturers and instructors, a total of 50. The curriculum embraces four years of eight months each. The entrance requirement is two years of collegiate work in addition to a four-year high school education. The freshman class is limited to 60 students on a scholarship basis. Texans having preference. The total fees for the four years respectively are \$108, \$83, \$45 and \$43 for residents of the state and \$150 additional each year for nonresidents. The Acting Dean is Dr. W. Keiller. Total registration for 1923-1924 was 256 graduates. 70. The thirty-fourth session begins Oct. 1, 1924 and ends May 31, 1925.

UTAH

Utah, population 449,396, has one medical college, the School of Medicine of the University of Utah, situated at Salt Lake City, which has 118,110 people.

Students intending to practice medicine in Utah in addition to a four-year high school education, must complete at least one year of collegiate work including courses in physics, chemistry and biology, prior to beginning the study of medicine.

Salt Lake City

UNIVERSITY OF UTAH SCHOOL OF MEDICINE—Organized in 1906. Gives only first two years of medical course. Each course covers thirty-six weeks. Three years of collegiate work are required for admission. The medical faculty consists of 11 professors and 15 lecturers and assistants, a total of 26. The fees are \$150 each year. The Dean is Dr. Ralph O. Porter. Total registration for 1923-1924 was 46. The eighth session begins Sept. 25, 1924, and ends June 5, 1925.

VERMONT

Vermont, population 352,428, has one medical school, located at Burlington, a town of 22,779 people.

Students who desire to practice medicine in Vermont, in addition to a standard four-year high school education, must complete two years of collegiate work, including college courses in physics, chemistry and biology, before entering on the study of medicine.

Burlington

UNIVERSITY OF VERMONT COLLEGE OF MEDICINE Pearl Street College Park.—Organized with complete course in 1822. Classes graduated in 1823 to 1836 inclusive when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. The faculty includes 19 professors, 5 associate and assistant professors and 19 instructors, assistants, etc., a total of 43. Two years of college work in addition to a four-year high school education are required for admission. The course of study covers four years of nine months each. For residents of Vermont the total fees for each of the first three years are \$200 and \$225 for the fourth year. Nonresidents are charged

an additional \$100 each year. The Dean is Dr. H. C. Tinkham. The total registration for 1923-1924 was 126 graduates, 33. The next session begins Sept. 18, 1924, and ends June 22, 1925.

VIRGINIA

Virginia, population 2,309,187, has two medical colleges, one the Department of Medicine of the University of Virginia situated in Charlottesville, population 10,688 and the Medical College of Virginia at Richmond, population 171,667.

Students desiring to practice in Virginia must be graduates of medical colleges which require that all students admitted shall have completed two years of collegiate work, including courses in physics, chemistry, biology and a modern language, preferably German, in addition to a four-year high school education.

Charlottesville

UNIVERSITY OF VIRGINIA DEPARTMENT OF MEDICINE—Organized in 1927. Classes were graduated in 1828 and in all subsequent years except 1865. It has a faculty of 25 professors and 22 lecturers, instructors, assistants, etc., a total of 47. The requirements for admission are the completion of a four-year high school course or its equivalent and two years of college work devoted to English, mathematics, chemistry, physics and biology. Total fees for the four years respectively are \$235, \$235, \$185 and \$175. The Dean is Dr. Theodore Hough. The total registration for 1923-1924 was 193 graduates. 30. The ninety-sixth session begins Sept. 18, 1924 and ends June 16, 1925.

Richmond

MEDICAL COLLEGE OF VIRGINIA Twelfth and Clay Streets.—Organized in 1938 as the Medical Department of Hampden Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was merged. In 1914 the North Carolina Medical College was merged. Classes were graduated in 1840 and in all subsequent years. It has a faculty of 45 professors and 80 lecturers, instructors, etc., a total of 125. The requirement for admission is a four-year high school education and in addition two years of collegiate work including courses in physics, chemistry, biology and English. The course embraces four years of eight months each. Total fees for the four years respectively are \$280, \$280, \$270 and \$300. The Dean is Dr. Manfred Call. The total registration for 1923-1924 was 303 graduates. 74. The eighty-sixth session begins Sept. 17, 1924 and ends June 2, 1925.

WEST VIRGINIA

West Virginia, population 1,463,701 has one medical college, the School of Medicine of West Virginia University, which offers the first two years of the medical course. It is located at Morgantown, a city of 12,127 population.

Students who desire to practice medicine in West Virginia must complete, in addition to a high school education, two years of collegiate work, including courses in physics, chemistry and biology, before entering on the study of medicine.

Morgantown

WEST VIRGINIA UNIVERSITY SCHOOL OF MEDICINE—Organized in 1902 and gives only the first two years of the medical course. Two years of college work are required for admission and the Bachelor's degree will be granted to those who finish the two years in medicine. Session extends through nine months. The faculty numbers 16. Fees. For residents of the state \$90 each year for nonresidents \$240. Cadets pay laboratory fees only. The Dean is Dr. John N. Simpson. The total registration for 1923-1924 was 106. The next session begins Sept. 15, 1924 and ends June 11, 1925.

WISCONSIN

Wisconsin, population 2,632,067, has two medical colleges, the Medical School of the University of Wisconsin, which teaches the first two years of the medical course, and is located at Madison, a city of 38,378 people, and the Marquette University School of Medicine, located at Milwaukee, a city of 457,147 people.

Students intending to practice medicine in Wisconsin, prior to entering a medical school, must complete, besides a four-year high school course, two years of collegiate work, including courses in physics, chemistry, biology and a modern language.

Madison

UNIVERSITY OF WISCONSIN MEDICAL SCHOOL—Organized in 1907. For matriculation at least two years in a college of arts and science or an equivalent training are required including two years of Latin, a reading knowledge of French or German and at least a year's work in physics, chemistry and biology. It has a faculty of 23 professors and 47 lecturers, instructors, etc., a total of 70. Thus far the school has offered only the first two years of the medical course. In the fall of 1925 the work of the third year will be given and in the fall of 1926 and thereafter the entire four-year course. Tuition fees for residents of the state \$115 for first year and \$95 for second year for nonresidents \$210 for first year and \$185 for second year. The Dean is Dr. Charles R. Bardeen. The registration for 1923-1924 was 157. The seventeenth session begins Sept. 24, 1924, and ends June 22, 1925.

Milwaukee

MARQUETTE UNIVERSITY SCHOOL OF MEDICINE Fourth Street and Reservoir Avenue—Organized in December 1912 by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. It has a faculty of 121. The entrance requirements are two years of college work including courses in physics chemistry biology and a modern language. The curriculum covers four years of eight and a half months each plus an additional fifth year's internship in an approved hospital. The fees for the four years respectively are \$313 \$303 \$303 and \$283. The Dean is Dr Louis F. Jermuin. The Dean of students is Dr Eben J. Carey. The registration for 1923-1924 was 225 graduates 28. The thirteenth session begins Sept 29 1924 and ends June 10 1925.

PHILIPPINE ISLANDS

The Philippine Archipelago, with a population of 10,607,872, has two medical colleges: the University of the Philippines College of Medicine and Surgery and the University of St. Thomas College of Medicine and Surgery. They are located in the city of Manila, which in 1914 had a population of 283,613.

Manila

UNIVERSITY OF THE PHILIPPINES COLLEGE OF MEDICINE Manila—Organized in 1907 as the Philippine Medical School under the support of the government of the Philippine Islands. In 1910 the title was changed to University of the Philippines College of Medicine and Surgery. Present title in 1923. The faculty includes 35 professors and 42 lecturers assistants etc. a total of 77. A two-year collegiate course including courses in English physics chemistry biology and either French or German is required for admission. The course extends over five years. In the fifth year the students serve as interns in the Philippine General Hospital. The fees for the four years respectively are \$81 \$74 \$59 and \$56. The Dean is Dr Fernando Calderon. The total registration for 1923-1924 was 142 graduates 11. The eighteen session began June 16 1924 and ends March 17 1925.

UNIVERSITY OF ST. THOMAS COLLEGE OF MEDICINE AND SURGERY Manila—Organized in 1907. The faculty includes 16 professors and 8 assistants instructors etc. a total of 24. The course extends over five years. The Dean is Jose L. de Castro.

CANADA

The Dominion of Canada has nine medical colleges, all of which require a six-year course including courses in physics, chemistry and biology. This course is practically equal to that in the colleges of the United States which require two years of college work for admission, including the science courses named.

Alberta

UNIVERSITY OF ALBERTA FACULTY OF MEDICINE Edmonton—Organized in 1913. Offers all six years of the medical course. The faculty includes 30 professors and 50 instructors assistants etc. a total of 80. Fees for each year are \$180. The Dean is Dr Allan C. Rankin. The registration for 1923-1924 was 109. The twelfth session begins Sept 29 1924 and ends May 15 1925.

Manitoba

UNIVERSITY OF MANITOBA FACULTY OF MEDICINE Winnipeg—Organized in 1883 as Manitoba Medical College. First class graduated in 1886 and a class graduated each subsequent year. The college transferred all its property to the University of Manitoba in 1919 and assumed the present title. The faculty includes 52 professors and 60 instructors assistants etc. a total of 112. The total fees for the five years respectively are \$180 \$175 \$185 \$185 and \$175. Matriculation requirements include two years of college work in the faculty of Arts and Science of a recognized university subsequent to the complete high school course required for entrance to the latter. The course extends over five years of eight months each. The Dean is Dr S. Vilhis Prowse. Total registration for 1923-1924 was 230 graduates 52. The next session begins Sept 29 1924 and ends May 29 1925.

Nova Scotia

DALHOUSIE UNIVERSITY FACULTY OF MEDICINE Halifax N. S.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty separate from the Halifax Medical College in 1855. In 1911, in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College the work of the latter institution was discontinued and a full teaching faculty was established by the University. By arrangement between Dalhousie University and the Provincial Medical Board of Nova Scotia the final professional examinations are conducted conjointly by the university and the board, and candidates may qualify at the same time for their academic degrees and the provincial license. First class graduated in 1872. It has a faculty of 22 professors and 28 lectures and demonstrators a total of 50. Requires matriculation one year of Arts and a graded course of six years including premedical courses in physics chemistry and biology. The fees are \$200 each year. The total registration for 1923-24 was 117 graduates 32. The Dean is Dr John Stewart. The next session begins Sept 10 1924 and ends May 12 1925.

Ontario

UNIVERSITY OF TORONTO, FACULTY OF MEDICINE Toronto—Organized in 1843 as the Medical Faculty of King's College. Abolished in 1853.

Reestablished in 1887. In 1902 it absorbed Victoria University, Medical Department, and in 1903 absorbed Trinity Medical College. The course of study covers six years of eight months each, the first two being devoted largely to physics chemistry biology and cultural courses in history science and English. It has a faculty of 63 professors and 172 lecturers associates etc., a total of 235. The fees are \$163 for the first five years and \$191 for the sixth year. The Dean is Dr Alexander Primrose. The total registration for 1923-1924 was 873 graduates, 208. The next session begins Sept 30 1924 and ends May 30 1925.

QUEEN'S UNIVERSITY FACULTY OF MEDICINE, Kingston—Organized 1854. First class graduated in 1855 and a class graduated each subsequent year. The faculty was originally a department of the university, but a separation took place in 1866 when the school was conducted under the charter of the Royal College of Physicians and Surgeons at Kingston. In 1892 the school again became an integral part of Queen's University. The faculty includes 24 professors and 27 assistants instructors etc. a total of 51. The fees for the six years are respectively \$141 \$146 \$141 \$155 \$155 and \$175. The last includes the fee of \$30 for the M.D. C.M. degrees. The course covers six years of thirty teaching weeks each the first including courses in physics chemistry biology English and French or German. The total registration in 1923-1924 was 274 graduates 65. The Dean is Dr J. C. Connell. The next session begins Oct 1 1924 and ends May 20, 1925.

UNIVERSITY OF WESTERN ONTARIO MEDICAL SCHOOL London Ontario—Organized in 1881 as the Western University, Faculty of Medicine, first class graduated in 1883 and a class graduated each subsequent year. Present title in 1923. The medical school has been under the control of the Board of Governors of the University of Western Ontario since 1913. The faculty numbers 61. Two years of premedical college work are required for admission including courses in physics chemistry and biology. The medical course covers four years of thirty-two weeks each. The total fees for the four years respectively are \$155 \$163 \$163 and \$183. The Dean is Dr Paul S. McWhibben. Total registration for 1923-1924 was 93 graduates 25. The next session begins Sept 23, 1924 and ends May 29 1925.

Montreal

MCGILL UNIVERSITY FACULTY OF MEDICINE—Founded 1824 as Montreal Medical Institution became the Medical Faculty of McGill University in 1829. First class graduated under the university auspices in 1833. No session between 1836-1839 owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop College. The course consists of two premedical years four medical years of eight months each and a fifth year of hospital intern work. The faculty consists of 49 professors and 159 lecturers etc. a total of 208. The total fees for each of the five medical years are \$222 for the sixth year \$252. The total registration for 1923-1924 was 613 graduates 166. The Dean is Dr C. F. Martin. The next session begins Sept 22, 1924 and ends May 29 1924.

UNIVERSITY OF MONTREAL MEDICAL FACULTY Montreal—Organized in 1843 incorporated in 1845 as the Montreal School of Medicine and Surgery. In 1891 by act of parliament the Medical Faculty of Laval University (organized in 1878) was absorbed. Present name by act of Parliament in 1920. A class was graduated in 1843 and in each subsequent year. The faculty numbers 81. The course extends over six years including preliminary courses in physics chemistry and biology. The total fees each of the five years respectively are \$207 \$200 \$242 \$214 and \$207. The Dean is Louis de Lotbiniere Harwood. The total registration for 1923-1924 was 155 graduates 73. The next session begins Sept 15 1924 and ends June 15 1925.

Quebec

LAVAL UNIVERSITY FACULTY OF MEDICINE Quebec—The Quebec School of Medicine organized in 1848 became in 1852 the Medical Department of Laval University. First class graduated in 1855 and a class graduated each subsequent year. The faculty numbers 37. The fees are \$135 each year. The course extends over five years the first year including courses in physics chemistry and biology. The Secretary is Dr Arthur Vallee. Quebec. Total registration for 1923-1924 was 208 graduates 23.

HOSPITAL INTERN YEAR**Medical Colleges**

Ten medical colleges have adopted the requirements of a fifth year to be spent by the student as an intern in an approved hospital or in other acceptable clinical work before the M.D. degree will be granted. These colleges and the years when the requirement became effective for matriculants and graduates are as follows:

	Affects Matriculants	Affects Graduates
University of Minnesota Medical School	1910 11	1915
Stanford University School of Medicine	1914 15	1919
Rush Medical College (University of Chicago)	1914 15	1919
University of California Medical School	1914 15	1919
Marquette University School of Medicine	1915 16	1920
Northwestern University Medical School	1915 16	1920
University of Illinois College of Medicine	1917 18	1922
Loyola University School of Medicine	1917 18	1922
Detroit College of Medicine and Surgery	1919 20	1924
College of Medical Evangelists	1922 23	1927

Licensing Boards

The hospital intern year has been adopted as an essential qualification for the license to practice in eleven states, becoming effective in different years, as follows

State Board of	Affects Student Matriculants	Affects All Applicants
Pennsylvania	1909-10	1914
New Jersey	1911-12	1916
Alaska	1912-13	1917
Rhode Island	1913-14	1917
North Dakota	1913-14	1918
Washington	1914-15	1919
Illinois	1917-18	1922
Michigan	1917-18	1922
Iowa	1918-19	1923
South Dakota	1920-21	1925
Delaware	1923-24	1928

The requirements both by medical schools and by state boards are overwhelmingly if not unanimously for the rotation service in general hospitals

State Requirements of Preliminary Education

There are now forty-two states (counting Alaska Territory) which have adopted requirements of preliminary education in addition to a standard four-year high school education. Of this number 39 now require the two year standard. These states, the number of college years required and the time the higher requirements became or become effective, are as follows

State Examining Board of	One Year of College Work		Two Years of College Work	
	Affects Students Matriculating	Affects All Grad uates	Affects Students Matriculating	Affects All Grad uates
Alabama			1915-16	1919
Alaska	1914-15	1918	1918-19	1921
Arizona	1914-15	1918	1918-19	1922
Arkansas*	1915-16	1919	1918-19	1922
California	1915-16	1919		
Colorado	1908-09	1912	1910-11	1914
Connecticut*	1911-12	1915		
Delaware				
District of Columbia†				
Florida	1914-15	1918	1918-19	1922
Georgia			1918-19	1922
Idaho			1915-16	1919
Illinois	1915-16	1919	1918-19	1922
Indiana	1910-11	1914	1911-12	1915
Iowa			1911-12	1915
Kansas	1910-11	1914	1918-19	1922
Kentucky	1914-15	1918	1918-19	1922
Louisiana	1915-16	1919	1918-19	1922
Maine	1915-16	1919	1916-17	1920
Maryland	1914-15	1918	1918-19	1922
Massachusetts				
Michigan	1914-15	1918	1918-19	1922
Minnesota			1908-09	1912
Mississippi	1915-16	1919	1919-20	1923
Missouri				
Montana	1914-15	1918	1918-19	1922
Nebraska*			1918-19	1922
Nevada				
New Hampshire	1914-15	1918	1915-16	1919
New Jersey	1915-16	1919	1917-18	1921
New Mexico	1914-15	1918	1918-19	1922
New York	1917-18	1921	1918-19	1922
North Carolina	1914-15	1918	1918-19	1922
North Dakota			1908-09	1912
Ohio				
Oklahoma	1914-15	1918	1917-18	1921
Oregon			1920-21	1924
Pennsylvania	1914-15	1918		
Rhode Island	1914-15	1918	1918-19	1922
South Carolina			1918-19	1922
South Dakota	1908-09	1912	1911-12	1915
Tennessee	1916-17	1920	1918-19	1922
Texas	1914-15	1918	1922-23	1925
Utah	1913-14	1917	1922-23	1925
Vermont	1913-14	1917	1918-19	1922
Virginia	1914-15	1918	1917-18	1921
Washington	1914-15	1918	1918-19	1922
West Virginia	1914-15	1918	1920-21	1924
Wisconsin	1914-15	1918	1915-16	1919
Wyoming†				

* Require a four year high school education or its equivalent

† No fixed standard

‡ The higher standards in Arkansas and Connecticut are evidently not enforced by the sectarian licensing boards of those states

THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES

The requirements for admission to and graduation from colleges holding membership in this association are 15 units of high school work and two years (60 semester hours) of college work

CURRICULUM The entire course of four years shall consist of not less than 3600 hours and shall be grouped in divisions and subdivided into subjects each division to be allotted approximately the time, on a percentage basis, as shown in the following schedule

1 Anatomy including embryology and histology	14	-18½%
2 Physiology	4½	-6%
3 Biochemistry	3½	-4½%
4 Pathology bacteriology and immunology	10	-13%
5 Pharmacology	4	-5%
6 Hygiene and sanitation	3	-4%
7 General medicine (neurology and psychiatry pediatrics dermatology and syphilis)	20	-26½%
8 General surgery (orthopedic surgery urology ophthalmology otolaryngology roentgenology)	13	-17½%
9 Obstetrics and gynecology	4	-5%
Electives	76	-100%
	24	-0%

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The secretary-treasurer of the Association is Dr. Fred C. Zapffe, 3431 Lexington Street Chicago

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET

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SATURDAY, AUGUST 16, 1924

MEDICAL EDUCATION—PROGRESS OF TWENTY-FOUR YEARS

For the twenty-fourth consecutive year, THE JOURNAL publishes, this week, statistics regarding medical education in the United States. During these years, the real progress made in medical education can be appreciated only by the comparatively few persons who, at the beginning of the campaign for improvement, were in close touch with the medical schools to a nation-wide extent. The progress, indeed, both in rapidity and in extent, has passed the highest expectations of those who began the campaign for improvement.

BEGINNING OF THE CAMPAIGN

Prior to 1900, it was generally known that conditions in medical education were bad, and that only a few of the medical schools were equipped to provide a comprehensive training in medicine. Little attention was called to these conditions, however, until the statistics in regard to medical colleges, students and graduates were published in the first Educational Number of THE JOURNAL, Sept. 21, 1901. It was known that very few of the medical schools were parts of recognized universities, that many were stock corporations conducted for the profit of their owners, and that in many of them entrance requirements were nominal or lacking. The statistics were based necessarily on reports and catalogues received directly from the medical colleges and, therefore, were presented from the most favorable point of view. Nevertheless, the conditions in medical education were shown to be so bad that energetic action would be required for their correction.

At that time there were 160 medical schools, in which were enrolled 26,417 students, of whom 5,444 graduated. It was the publication of such data, for two or three consecutive years, that led to the creation, in 1904, of a permanent committee of the American Medical Association—the Council on Medical Education—to centralize its efforts on this particular work. It was not until late in 1905 that the Council established an office at the headquarters of the Association.

PROGRESS FROM 1906 TO 1910

As a part of its function, the Council naturally took over the work of collecting and tabulating statistics relating to medical education. Investigation regarding medical education abroad revealed the significant fact that the United States had more than half the world's supply of medical schools, but that in educational standards very few of these could compare favorably with those abroad. Just how bad the existing conditions were, however, could not be known until in 1906 a further investigation, including an actual inspection of all medical schools, was made. Of the 160 schools then existing, scarcely thirty were even pretending to require a four-year high school education, while in more than a hundred, the entrance requirements were nominal or entirely lacking. In many of the institutions, graded courses of instruction were not being given, and in several the same schedule of lectures was followed alike for the three or four years of attendance that were required for the degree. At the lowest extreme, several institutions were found which were little more than diploma-mills. Only a few had hospitals in which medical students could gain access to a fair number of patients. A slightly larger number had outpatient departments or dispensaries wherein more than a scattering of patients was available for teaching purposes. There were a score or more, however, from which students were graduated without having had the opportunity to study patients either in dispensaries or in hospitals, and without having had laboratory work other than crude dissections and the simplest tests in urinalysis.

MEASURES FOR IMPROVEMENT ADVOCATED

At its first annual conference in 1905, the Council proposed two standards of medical education. One, which was for immediate adoption, suggested a four-year medical course of thirty weeks each, to be preceded by the completion of a four-year high school course, and an "ideal standard" for adoption, Jan. 1, 1910, suggesting that the minimum entrance requirement be increased to a year of college work devoted to physics, chemistry and biology. The Council's suggestions brought a prompt and enthusiastic response from the medical schools. In 1910, the high school education had been adopted as the minimum entrance requirement by more than a hundred medical schools, of which forty later required also one or two years of college work. Another remarkable occurrence was the rapid reduction in the number of medical schools. During the inspection of schools made in 1906-1907, the Council advocated that mergers be brought about in cities or states having two or more institutions. As a consequence, by 1910 the total number of medical schools had been reduced to 131, and, of the twenty-nine colleges that had ceased to exist, twenty-four had been merged with other institutions.

The classification resulting from the first inspection¹ was not published, but was read at the Council's educational conference and at the annual meeting of the American Medical Association. Each college also was notified in regard to its classification. Following the second inspection, which was made in 1909-1910, another classification² was prepared and this was published.

Early in 1909, at the urging of the Council, the Carnegie Foundation for the Advancement of Teaching consented to make a survey of the medical schools. The second tour of inspection, therefore, was made jointly by representatives of the Council and the Foundation. In its report, which was published in 1910, the Carnegie Foundation made no classification of medical schools, nor did it suggest any standards, but it did secure a wide publicity, which was of tremendous service in the later developments in medical education.

During 1908-1909, a careful study of the medical curriculum was made by a special committee of one hundred prominent educators appointed by the Council. This first comprehensive report on the medical curriculum was presented at the annual conference of the Council in April, 1909.³

PROGRESS FROM 1910 TO 1916

The year 1910 was important for several reasons. Besides being the year when the Carnegie Foundation issued its memorable report on medical education, and when the Council published its classification of medical colleges, it was also the year when the Medical Students' Register was established. This register was made possible through the splendid cooperation received from the majority of medical schools, and in it were kept, chronologically, the educational histories of medical students and the essential data for their identification. After the students graduate, their cards become a part of the Physicians' Biographical Index. This register has been of special value as a check over reports of physicians appearing for licensure before state medical examining boards. It provides a means of verifying the work of bona fide students, and aids in the exposure of impostors.

During the session of 1911-1912, a third complete inspection of all medical schools was made, resulting in the third classification.⁴ At this time the institutions formerly rated in Class A were divided into two separate groups, Classes A and A plus. This division was necessary because of defects in certain matters which, although serious, were not deemed sufficient to warrant an immediate demotion into Class B. This action brought a prompt correction of the defects in

most of the schools involved, so that the A plus classification was discontinued a few years later.

GENERAL ADOPTION OF HIGHER ENTRANCE REQUIREMENTS

The "ideal standard," already mentioned, could not be generally adopted in 1910, owing to the lack of four-year high schools in certain sections of the country, particularly in the West and South. Indeed, when the campaign for improvement of medical education began, very little effective work had been done in the standardization of general education. Among its other duties, the Council on Medical Education found it necessary to help in the dissemination of information in regard to the curriculums of high schools. By Jan. 1, 1914, however, the development of high schools had progressed sufficiently to warrant the additional requirement of a year of college work as an essential for the Class A rating. By 1914, therefore, seventy-eight of the 106 medical schools then existing were requiring for admission one or more years of college work in addition to a four-year high school education, and thirty-four of these were voluntarily requiring two years of college work. Most of the medical colleges, also, had adopted more strict and reliable methods of verifying and evaluating students' credentials. Through the reports obtained for the Medical Students' Register, the degree of care with which entrance requirements were administered was known with fair accuracy, and any faulty methods or "paper standards" were promptly discovered.

In 1916, the entrance requirement essential for Class A medical schools was further extended to two years of college work, which became effective, Jan. 1, 1918. This was not a drastic ruling, since forty-six medical colleges and seventeen state licensing boards had already adopted that standard. The American Medical Association has voted that no higher requirement of premedical education is justifiable.

INCREASED FINANCES FOR MEDICAL SCHOOLS

Through the constant agitation for better conditions and the publicity given to the report of the Carnegie Foundation, the financial needs of medical education were brought to the attention of philanthropists, so that large gifts of money to medical schools became more frequent. This led to the securing of more and better college buildings, more and better equipped laboratories, more scholarships and endowed chairs, and the employment of more and better qualified all-time teachers, particularly in the laboratory departments. Of still greater importance, closer relationships were established between medical schools and large hospitals.

¹ Of the 160 medical colleges comprised in the first classification eighty-two were in Class A, forty-six in Class B and thirty-two in Class C.

² There were 135 medical colleges included in the second classification of which seventy-four were in Class A, thirty in Class B and thirty-one in Class C.

³ This was published in the American Medical Association Bulletin 5, No. 1 (Sept. 15) 1909.

⁴ Of the 118 medical schools included in the third classification twenty-four were in Class A+, thirty-nine in Class A, twenty-four in Class B and thirty-one in Class C.

⁵ At that time the high school represented the only portion of general education that had been definitely standardized. In 1896 the Committee of Ten of the National Education Association headed by President Charles W. Eliot of Harvard published its famous report fixing definite schedules of study in the classical Latin scientific modern language, and English courses of instruction in high schools. As high school schedules have been improved these have been included for their suggestive value in the Council's pamphlet for prospective medical students. Choice of a Medical School.

by which a greater abundance of clinical material was available for teaching purposes. Not only were closer relations established with large hospitals, but more teaching hospitals entirely controlled by medical schools were built.

MEDICAL EDUCATION AND THE WORLD WAR

In 1917, when the United States entered the World War, the number of medical schools had been reduced to ninety-six, but of these, eighty-six had not only adopted higher entrance requirements but also had undergone marked improvements in other respects. For several years they had been graduating students trained under these better conditions—graduates who in large numbers entered the government medical services and had in charge the medical care of American soldiers and sailors.

The abundance of information collected in the Medical Students' Register was utilized by the war department as a check of the qualifications of those who applied for commissions. The information was of further service when the American Medical Association undertook the work of urging more physicians to enlist in the government medical services. The campaign for improvement which had made such rapid headway since 1901 was therefore of great service to the nation during the war.

SUMMARY OF PROGRESS MADE

During the last twenty-four years, medical education in the United States has been extensively improved, so that graduates now obtain a medical training in accordance with the greatly enlarged present-day knowledge of medicine. A large oversupply of medical schools, including many which were of low type, has been replaced by half as many greatly improved, well equipped institutions. The number of medical students was reduced from 28,142 in 1904 to 12,930 in 1919, but the number in the better equipped colleges was increased from 4 per cent to 88 per cent. Since 1919, also, these better trained students have been increasing at the rate of more than a thousand each year, the total enrolment this year being 17,728, of whom 95 per cent are in Class A medical schools. During the twenty-four years, the number of graduates from medical schools was decreased from 5,747 in 1904, of whom only 369 were from the better colleges, to 2,656 in 1919, of whom 94 per cent were from the better equipped institutions. Since 1919, with the exception of the war class which graduated in 1922, the numbers graduating each year have been rapidly increasing. This year there were 3,562 graduates, of whom 94 per cent were from the better equipped colleges.

GRADUATE MEDICAL EDUCATION

Three complete inspections have been made of all graduate and postgraduate medical schools, these being completed in 1916, 1920 and 1923. Based on these inspections, the "Principles Regarding Graduate Medi-

cal Education"⁶ were prepared and in June, 1923, were adopted by the American Medical Association. Last year, a list of fifteen approved graduate medical schools was published. This year, the number has been increased to forty-four. Attention is particularly called, however, to the series of subjects⁷ showing under each of the institutions in which approved courses of instruction are being offered. This information will be of assistance to physicians desiring to obtain graduate work in those subjects. The list at present is not large, but other subjects and institutions will be added as rapidly as they are investigated and found worthy of approval.

ACKNOWLEDGMENTS

In the publication of these statistics during the last twenty-four years, our acknowledgments are due to the officers of medical colleges and state licensing boards, both individually and in their national organizations, for their most prompt and generous cooperation. It was this cooperation which permitted advancements to be made in a few years which otherwise would have required as many decades to accomplish. The Carnegie Foundation for the Advancement of Teaching, and later the General Education Board, have been of great help, particularly in providing for the financial needs of medical education. The rapid reorganization of medical colleges and medical education in the United States has been no less marvelous, although perhaps less spectacular, than other great scientific achievements of the last twenty-five years.

FORMATION OF BILE PIGMENT WITHOUT THE LIVER

If the presence of the bile pigment bilirubin in the blood serum and the urine is to be taken as infallible evidence of hepatic disorder—either obstruction of the biliary ducts or some other liver disturbance—the characteristic coloring matter must have its origin in the hepatic tissues. This has long been accepted by almost all physiologists to be the case, and on this seemingly well founded assumption, the value of the diagnostic tests for bile pigment in the urine has been based. Indeed, the underlying belief in the exclusive role of the liver in the genesis of bile pigment has been so widely adopted and so universally taught that denial has seemed to be a scientific heresy that verged on extreme improbability, to say the least. *THE JOURNAL* also supported this view.⁸ Jaundice has been made practically synonymous with hepatic disorder.

To Whipple and his collaborators in this country belongs the credit of protracted efforts to test the validity of the long current hypothesis and of combating its accuracy. In studying the jaundice that develops

⁶ These will be found on page 518.

⁷ Graduate Courses in Medical Subjects' page 520.

⁸ Production of Bile Pigment Without Intervention of the Liver editorial J. A. M. A. 79: 558 (Aug. 12) 1922. Where Are the Bile Pigments Formed? *ibid.* 81: 2116 (Dec. 22) 1923. Whipple G. H. The Formation of Bile Pigments *ibid.* 82: 910 (March 15) 1924.

in days after injections of hemoglobin or after poisoning with chloroform, Whipple and Hooper⁹ noticed that animals bearing an Eck fistula, whereby the portal blood is diverted from the liver, nevertheless developed icterus similar to that induced in normal dogs under similar conditions. Even when the blood supply to the liver was further completely excluded by ligation of the hepatic artery, jaundice still appeared. Positive reactions for bilirubin were obtained, after injections of hemoglobin, in the blood and fat of dogs having only a head-thorax circulation. The authors naturally concluded that the liver could not be the exclusively potent factor in the conversion of hemoglobin to bilirubin.

It matters little now whether those who have approached the problem in similar ways have been unable to demonstrate an extrahepatic formation of bilirubin in every instance. A truly crucial experiment has been undertaken by several groups of investigators, most recently by Mann¹⁰ and his co-workers. They have succeeded in removing the liver completely from animals and keeping them alive for many hours. Under such conditions, a yellow pigment giving a positive test for bilirubin accumulates progressively in the urine, blood plasma and fatty tissues. The gradual augmentation of the color, together with the fact that it is not found in the plasma immediately following the hepatectomy, makes it reasonably certain that the pigment is not merely squeezed from the liver at the time of the operation. The amount found is too large to have come from stored pigment or from the gastrointestinal tract, which, as a matter of observation, becomes pigment free in a short time after liver ablation. As the pigment appears even when both liver and spleen are removed, the latter organ also is not necessary for its formation. Furthermore, the jaundice occurs when no blood is present in the peritoneal or any other serous cavity, so that the cells lining these spaces are likewise not essential to the pigment elaboration. In fact, the latter does not seem to be dependent on any of the intra-abdominal organs.

In view of the now known facts, it is difficult to escape the conclusion that the pigment bilirubin, so characteristic of bile, can be formed by some organ or tissue without the intervention of the liver. The Rochester physiologists¹⁰ are of the opinion that there is only one possible source of bilirubin, namely, hemoglobin. They assert that, although the rate of formation of bilirubin after hepatectomy has been less than the rate of excretion of bile pigment from the normal liver, it has been formed at a rate that would justify a query as to how much of the bile pigment normally is formed by the liver and how much elsewhere in the body. Presumably the liver must henceforth be considered, to some extent at least, as an excretory organ so far as

bile pigment is concerned, a portion of the latter being of extrahepatic origin. According to Mann, Bollman and Magath, the logical site for both the destruction of worn out, functionless erythrocytes, and the disintegration of hemoglobin would be the place where the greatest functional stress is placed on the erythrocytes—that is, in the capillaries. This, however, is mere speculation at present. The outstanding contribution is the demonstration that the liver is not indispensable for the formation of bile pigment. Henceforth this must be reckoned with.

Current Comment

REQUIRE EQUALLY HIGH QUALIFICATIONS OF ALL WHO PRACTICE MEDICINE

Statistics published this week show that the medical schools of the United States are training physicians in accordance with the present-day extensive knowledge of medicine. The turning out of well trained physicians is only one factor, however, in securing for the public the benefits of modern scientific medicine. Adequate legal restrictions must be provided against ignorant or inadequately trained doctors. Such legal restrictions, indeed, have now been established in all but eight states¹ for those generally regarded as "physicians," since medical practice laws in most states have established for physicians the educational standards adopted by our better medical schools. Unfortunately, however, under various pretexts and by persistent hammering at legislatures, cultists of various types have obtained legal authority to treat the sick on qualifications lower than those required of physicians. These irregular practitioners assume a personal responsibility for the care of the sick and act as substitutes for the physician, and, since they do not have the physician's qualifications either educationally or professionally, they practice under false pretenses, and are a menace to the health and lives of their patients. As medical science has advanced during the last few decades, this menace has been constantly increasing. Delicate and highly technical procedures are being employed in the treatment of disease which, in the hands of unskilled or ignorant practitioners, are exceedingly dangerous to the patient. Modern medicine also has brought out a specific treatment for each of several diseases, and a failure to use this treatment may result in disaster to the patient. It is time that the dangers from untrained or incompetent practitioners should be generally recognized and that medical laws should be strengthened to safeguard the public against them. The legal phases of this problem have been clearly presented² by Harry Eugene Kelly of the Chicago bar, who supports his statements with an array of court decisions that greatly add to their force. In the eyes of the law, according to Kelly, the word "physician" includes every one who assumes the responsibility for the care of the

⁹ Whipple, G. H. and Hooper, C. W. *J. Exper. Med.* 17: 593, 612, 1913.

¹⁰ Mann, F. C., Bollman, J. L. and Magath, T. B. *Studies on the Physiology of the Liver, IX, The Formation of Bile Pigment After Total Removal of the Liver*, *Am. J. Physiol.* 69: 393 (July) 1924.

¹ See tabulation, *State Requirements of Preliminary Education*, page 531.

² Kelly, H. E. *Regulation of Physicians by Law*, *A. M. A. Bulletin* 19: 179 (June Part 2) 1924. A copy of this Bulletin will be mailed for 10 cents.

sick and the injured, furthermore, the educational and professional qualifications required of physicians should apply with equal force to all who are granted legal authority to practice the healing art. The training given in medical schools has not yet reached perfection, but medical students are now being given a far better knowledge of the causes and treatment of diseases than was possible twenty or more years ago. The greatest problem of today is how to secure for the entire public the widest possible benefits of modern scientific medicine. An important step toward the solution of this problem would be the adoption in all states of laws requiring reasonable educational qualifications of all who are to practice medicine.

BLOOD SUGAR AND NERVOUSNESS

The effects of overdosage with insulin have been brought emphatically to the attention not only of experimenters in the physiologic laboratories but also of many clinicians who were pioneers in the use of this substance in the treatment of human disease. The untoward phenomena are evidently closely associated with the lowered content of glucose in the blood, for any procedure, dietary or other, that overcomes the hypoglycemia brings prompt relief. Doses of insulin that lead to marked hypoglycemia may bring about irregularities of the heart, a slight decline in mean arterial blood pressure, and a lowered carbon dioxide capacity of the blood, among other symptoms, which may include nervousness and prostration.¹ These are manifestations exhibited in certain types of nervous disorder that involve asthenia, anorexia, tachycardia, palpitation, and digestive disturbances commonly thought to be psychogenic in character. Parker and Finley² of the College of Physicians and Surgeons, New York, have accordingly ventured to treat selected patients with glucose, particularly in cases in which the blood sugar content and the carbon dioxide capacity of the blood encouraged this. With daily sugar intakes of from 40 to 100 gm, the peculiar symptoms were noticeably relieved in a sufficient number of persons to justify further therapeutic attempts in this direction. Many investigators have attempted to discover a metabolic cause for certain psychogenic symptoms, it may be worth while to reconsider the carbohydrate factor in this connection.

VITAMIN B AND BASAL METABOLISM

Among the numerous and varied potencies that have been attributed to vitamins, their assumed ability to promote metabolism in some way has gained considerable credence. This applies in particular to vitamin B, which became associated not long ago in the popular mind with yeast and products derived from yeast. The vague conceptions of developing "pep" in persons—to use current slang applied to health—and of "speeding up" the metabolism have been introduced into discus-

sions of the potentialities of the vitamin on the basis of rather indefinite evidence. It is true that an experimental animal subsisting on a diet deficient in vitamins will presently show symptoms of listlessness and physiologic inertia, which are readily relieved and dissipated by administration of vitamin-bearing foods. Restoration of vigor does not, however, necessarily involve a change in the metabolic rate. Deuel and Weiss¹ of Cornell University Medical College have carefully determined the basal metabolism at frequent intervals in susceptible animals during a regimen that was essentially devoid of vitamin B. The diminution in basal heat production was no greater than that which would be expected from the decreased body weight due to a lowered food intake. Both before the onset of the characteristic symptoms of polyneuritis and after their relief by administration of products bearing vitamin B, the basal metabolism was remarkably constant, thus indicating that the vitamin deficiency per se does not influence heat production. Furthermore, an augmentation of vitamin B intake in normal animals does not bring about any "speeding up" of the chemical processes, so far, at least, as they would be revealed by the metabolic rate. These carefully controlled findings should put an end to the statements, lately appearing in the European continental literature in particular, that vitamin B somehow directly promotes oxidation in the body. The preeminent physiologic importance of vitamins may be recognized without accepting unfounded hypotheses to account for their potency.

THE SIGNIFICANCE OF NITRITURIA

The occasional occurrence of nitrates and nitrites in human urine has long been recognized by physiologic chemists, having been brought to public attention sixty years ago by Schoenbein. Its possible significance has been debated. Drinking water often contains both these types of nitrogen compounds, and because of this it has been held responsible for their absorption and excretion through the kidneys. Modern bacteriology has demonstrated the ready production of nitrite from nitrate through the action of certain reducing microorganisms, so that the appearance of nitrite might be explained on the basis of bacterial intervention when this is a possibility. A number of recent studies, notably those of Paul and Chapin² in the Ayer Clinical Laboratory of the Pennsylvania Hospital, Philadelphia, point to the presence of nitrate-reducing bacteria in the urinary tract as the commonest cause of nitruria. When care is taken to avoid microbial contamination from the air, the urine of healthy persons rarely gives a reaction for nitrite. This applies to the great majority of general hospital patients. Nitrites may develop if the urine specimens are inoculated with strong nitrate-reducing organisms. On the other hand, the nitrite test is frequently obtained in case of urinary infection, particularly if the reaction of the secretion is favorable.

1 Banting F G, Campbell N R, and Fletcher A. A. *Brit Med J* 1 8 (Jan 6) 1923. Edward D J, Page I H, and Brown P K. *Proc Soc Exper Biol & Med* 21 170 1924.

2 Parker J T and Finley C S. Some Results Obtained by the Treatment of Nervous Phenomena with Glucose. *Proc Soc Exper Biol & Med* 21 517 (May) 1924.

1 Deuel H J Jr and Weiss Robert. The Basal Metabolism in Vitamin B Deficiency. *Proc Soc Exper Biol & Med* 21 456 (May) 1924.

2 Paul J R and Chapin W E. Nitruria in Infections of the Urinary Tract. *Bull Ayer Clin Lab Pennsylvania Hosp* 8 23 (May) 1924. Weltmann. *Wien klin Wchnschr* 35, 1922. Lowenstein *ibid* 37 142 1924.

to the form of decomposition involved. If, as the recent observations indicate, the presence of nitrites in freshly passed urine is most commonly due to the growth of nitrate-reducing bacteria within the urinary tract, the test for nitrites in the urine may be useful as an aid to the diagnosis of urinary infections caused by nitrate-reducing bacteria. Paul and Chipin believe that it may prove of particular value in cystoscopic work and in the course of a differential kidney study, but whenever used, its value is limited to those infections caused by nitrate-reducing organisms. Apparently, it is such organisms that are involved in a large number of bladder and kidney infections.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH ETC.)

ALABAMA

Personal—T. H. Sewall, Birmingham, has been appointed director of the bureau of epidemiology of the state department of health.

"Physcultopractor" Convicted—John Vinson of Gadsden, a physical culture devotee, was found guilty by a jury of practicing medicine without a license, July 22, and fined \$150, it is reported. An indictment in this case was secured by the Marshall County Medical Society.

Change in Code Affecting the Professions—The section of the new code dealing with professional practice which goes into effect in Alabama, August 17, has been rewritten by the code committee. Heretofore, persons found guilty of practicing a profession without a certificate were required, after having been indicted, to be tried by a jury in a criminal court. In the future such practitioner or professional person will have to face quo warranto proceedings in a civil court and before a judge, and will have to show cause for practicing without a license.

ARKANSAS

Tablet to Dr. Welch—The Arkansas Medical Society, at its forty-ninth annual meeting, Fayetteville, May 20, passed a resolution to appropriate a sum not to exceed \$200 to erect a suitable tablet to be placed on the lawn of the city hospital, Fayetteville, in memory of Dr. Welch, the first president of the state medical association.

CALIFORNIA

Chiropractor Loses Suit—Jasper D. "Backbone" Butler, chiropractor, Oakland, was recently sued for \$15,500 by a patient named Rosendo Vasquez, who testified that his leg was broken by the "rough and negligent treatment" of Butler. The jury deliberated ten minutes, then awarded the patient \$2,607.

Licenses Revoked—The state board of medical examiners reports that the license to practice medicine of Dr. Olaf A. Kvello, Hemet, was revoked, July 10, because he had failed to comply with the requirements of his probation, and that the license of Dr. Curt O. Dietsch, Los Angeles, was revoked, July 6. Dr. Dietsch was found guilty, at a hearing before the board, Feb. 16, 1921, of performing an illegal operation.

Questionable Diplomas—The state board of medical examiners has received a photostatic copy of a blank diploma issued by the "College of Medical and Drugless Sciences of Southern California—Department of Medicine and Surgery," which diploma confers the degree of Doctor of Medicine. It is understood that this institution is operated by Jules Palotay, a graduate of the Chiropractic School and licensed as a drugless practitioner in Los Angeles. The board has also received a photostatic copy of a diploma of the "College of Medical and Drugless Sciences of Southern California—Naturopathic Department," which diploma bears the name of James R.

Simpson, dated Los Angeles, June 29, 1924, but without the signature of either the secretary or president and dean, also without the seal of the institution.

COLORADO

State Board Orders Olives Confiscated—It is reported that more than 500 cans of ripe olives, alleged to be the same brand that led to the death of four persons at Cody, Wyo., two weeks ago (*THE JOURNAL*, August 9, p. 447), were confiscated by the health department at Pueblo on instructions from the state board of health. The olives, found in four retail stores and one wholesale house, had been shipped to Pueblo direct from Oroville, Calif., where they were packed.

CONNECTICUT

Hospital News—The president of Stamford Hospital, Stamford, announces that plans are being made for the erection of a \$600,000 building.

Laboratory Moved—The state department of health's bureau of laboratories has been moved to Hartford. All material for examination should now be sent to the Bureau of Laboratories, Hartford, Postoffice Box 1001.

DELAWARE

Health Education in Public Schools—The department of public instruction has for two years carried on a nutrition program in the public schools, confined chiefly to the educational phases of nutrition. A group of children who were 8 per cent or more underweight were selected. Twelve girls were then trained by giving them twelve lectures on twelve health rules, as for example, What Shall I Eat for Breakfast? Then twelve weeks were set aside in which these girls went to the grade rooms and lectured to the pupils on the particular health rule that they had prepared. At the same time, printed health matter was distributed under the direction of domestic science teachers. At the end of the twelve week period the groups of pupils were weighed monthly, and a chart was kept for each child on which was the height, actual weight, normal weight and a column for sickness. A summary of the results for 1923 made by the home economics department, shows that 1,247 children who were 8 per cent underweight were taught the rules of proper nutrition, and that 1,015 of these children gained 2,660 pounds in twelve weeks, an average of 26 pounds per child. One hundred and forty-six children lost an average of 1 pound, owing probably, it was said, to an epidemic of measles, influenza and colds during the time the program was in operation. One hundred and fifty-four children attained normal weight. The report for the last school year is not yet complete, but the results appear to be about the same as for 1923.

DISTRICT OF COLUMBIA

Physician Held—Dr. Edward B. Preis, Washington, held on charges of illegally possessing narcotics, was committed to jail, July 30, in default of \$1,000 bond, it is reported. Dr. Preis' narcotic license was surrendered to the government in April, 1922, after an investigation by federal agents.

FLORIDA

Hospital News—A new \$25,000 addition will be made to the nurses' home of the Jackson Memorial Hospital, Miami. —A bond issue was recently made for the erection of a \$600,000 hospital building at Tampa. —The Polk County commissioners have decided to issue \$100,000 bonds for a county hospital and farm. —The Marvin Smith Sanitarium, Jacksonville, has been sold to the Home for the Aged.

GEORGIA

Lye Legislation—At the recent meeting of the Medical Association of Georgia at Augusta, the resolution relative to the labeling of lye was adopted. Pennsylvania and Florida have passed laws that require the proper labeling of caustic acid and alkali preparations.

Physicians in Court—In the case of Dr. Lemuel E. Thornton, Fitzgerald, arrested, July 16, on an indictment by the grand jury for involuntary manslaughter which grew out of an alleged illegal operation, it is reported, the jury was discharged after nineteen hours deliberation and a mistrial declared by the judge. —Dr. Roderick D. McLeod, Lyons, was sentenced, July 16, it is reported, by Judge Barrett in the United States District Court to serve one year and a day in

the federal penitentiary for violation of the Harrison Narcotic Law

Personal—Dr Sam A. Anderson, Macon, has been elected health officer by the Baldwin County board of health to succeed the late Dr George L. Chapman, Milledgeville—Dr Eugene E. Murphy, Augusta, has been reelected president of the board of health of Augusta. This is Dr Murphy's fifth term as president of the board—Dr Clara Benson, formerly pathologist to the Henry Ford Hospital, Detroit, has been appointed pathologist to the Macon Hospital, Macon—Dr Andrew Fletcher Quillian, Commerce, has been appointed physician to the federal penitentiary

ILLINOIS

Hospital News—It is planned to erect a \$50,000 hospital building at Benton in the near future—The Burnham Hospital, Champaign, has been taken over by the city as the result of a recent vote—Bids have been closed for the erection of a \$150,000 addition to the Wabash Railroad employees' hospital at Decatur

Another County Health Department—Wabash County has completed arrangements for creating a full-time health department on an annual budget basis. A full-time medical director will be employed to assume charge of the work. This is the second county, the other being Crawford County, to establish a health unit by the cooperative efforts of the state, the federal government and the International Health Board of the Rockefeller Foundation

Chicago

Outpatient Station for Seamen—The U. S. Public Health Service has arranged to extend its relief work in South Chicago by the establishment of an outpatient relief station at 3018 East Ninety-First Street. Merchant seamen from the vessels docking in that vicinity will now be able, when sick or injured, to secure medical relief. Patients needing hospital care will be sent to the Marine Hospital, 4141 Clarendon Avenue, under which the new station will operate as a branch

Rush Medical Building Being Wrecked—The old Rush Medical College building at Harrison and Wood Streets, erected in 1875, is now being wrecked, to be replaced by the Rawson Laboratory of Medicine and Surgery, the construction of which is part of the expansion program of the University of Chicago. The new structure, which will be five stories high and cost about \$500,000, will house the Central Free Dispensary and the classrooms, and be connected with Senn Memorial Hall and the Presbyterian Hospital

IOWA

Society News—Dr Charles F. Starr, Mason City, was recently elected president of the Austin Flint Cedar Valley Medical Society, Dr John McDannel Nashua, vice president, Dr William E. Long, Mason City, treasurer (reelected), and Dr Leonard A. West Waverly, secretary—At the twenty-seventh annual session of the State Society of Iowa Medical Women at Des Moines, recently, the following officers were elected: president, Dr Jane Wright, Clear Lake, vice president, Dr Grace Doane, Des Moines, secretary, Dr Eleanor Hutchinson, Woodward, and treasurer, Dr Helen Johnston, Des Moines

Personal—Dr Glen W. Doolen, Davenport, has been appointed county physician of Scott County to succeed Dr George Braunlich, Davenport, resigned—Dr Aura J. Miller, for three years assistant pathologist at the university hospital, Iowa City, received an appointment with Dr Simeon B. Wolfback at the Medical School of Harvard University, Boston, effective July 1—Dr Junious E. Crouch, who has been at the Veterans' Hospital at Knoxville for the last three years, has resigned on account of his health—Dr Hans Hansen Logan has been appointed medical officer in charge of the new Veterans Bureau Hospital at St. Cloud, Minn. Dr Hansen served with the Eighty-Eighth Division during the World War and lately has been in charge of a veterans' hospital in New York

KANSAS

Personal—Dr Jacob J. Entz, Wichita, has been appointed state epidemiologist to succeed Dr Clarence H. Kinnaman, Topeka. Dr Entz is a member of the state board of health

Health Survey Postponed—A health survey of Kansas City, by Dr Watson S. Rankin, Raleigh, N. C., and Dr Samuel J. Crumline, Topeka, of the American Child Health Association, which was to have started July 28, has been postponed until early in the fall. The board of health will announce the date later

KENTUCKY

Physicians Held to Grand Jury—It is reported that Drs M. W. Hyatt and William T. Barnette, both of Springfield, charged with violating the Harrison Narcotic Law, have been held to the federal grand jury in Louisville

State Board to Inspect Olives—It is reported that the state board of health has called on all stores where ripe olives are sold, to stop selling such olives until they have been inspected by an agent of the state board of health. The object of this action is to prevent food poisoning by olives which have been improperly preserved

LOUISIANA

Loss Due to Anthrax—The executive officer of the Louisiana livestock and sanitary board stated that 20,000 head of livestock have been lost to the state in the epidemic of anthrax this summer, which is the worst the state has had since 1901 infection having been reported in forty-three of the sixty-four parishes. The loss amounts, it is said, to about \$1,500,000

New Tuberculosis Society—The officers of the new anti-tuberculosis organization, incorporated as the Tuberculosis and Public Health Association of Louisiana, are: president, Dr William H. Seeman, New Orleans, vice presidents, Drs Hector E. Bernadas, New Orleans, and Julius Dupont, Houma, secretary, Miss Anna Kennedy, and treasurer, W. R. Irby. The purposes of the association, according to its charter, are the study of tuberculosis, dissemination of knowledge concerning the disease, investigation of its prevalence in Louisiana, publication of useful data, securing of proper legislation for the prevention and relief of tuberculosis, cooperation with public authorities and various organizations in tuberculosis work, encouragement of the establishment of sanatoriums, and the promotion of community health

MARYLAND

Personal—Raymond Pearl, Ph.D., Johns Hopkins University Medical School, Baltimore, and Leon J. Cole, Ph.D., of the bureau of animal industry, were among the speakers at the Scottish Cattle Breeding Conference, Edinburgh, July 7-12, which is said to be the first international meeting of its kind

New City Hospital Will Open September 1—Six buildings of the municipal hospital at Montebello, the nucleus of the new Baltimore General Hospital, will be opened September 1. The structure and equipment have cost about \$900,000. The hospital for communicable diseases has a capacity of 110 beds, including thirty-five private rooms, which can be increased to 140 beds in an emergency. There will be a resident staff of five physicians, the superintendent, and twenty-five nurses. Treatment will be free to residents of Baltimore. Accident cases will not be received. Persons with communicable diseases who desire may engage private rooms, but the policy will be not to encourage pay patients. The group consists of the main hospital building, administration building, nurses home, laundry with servants quarters, service building, garage and power house. Dr Birkhead Macgowan will be superintendent of the group. Sydenham Hospital, the present hospital for communicable diseases, of which Dr Macgowan is now head, will be turned over to the supervisors of Baltimore city charities as part of the Bay View group

New Endowment for Johns Hopkins University—A survey begun in 1920 in connection with the close, in 1926, of Johns Hopkins University's first half century includes a series of projects ultimately involving the expenditure of \$50,500,000 of which \$20,800,000 is to be devoted to the medical school and hospital and the school of hygiene and public health. Daniel Willard, president of the Baltimore and Ohio Railroad and chairman of the committee to finance certain developments at the university has announced a program involving \$16,350,000 for education and research. Toward this program, \$8,885,000 has been raised, including \$400,000 from the General Education Board for a pathologic laboratory, \$400,000 from Mrs. Lucy Wortham James for a woman's clinic, \$2,000,000 from the Carnegie Corporation for a new dispensary, \$2,000,000 from Mr. and Mrs. Henry Phipps, the General Education Board, Edward S. Harkness and others for the Phipps Psychiatric Clinic, \$3,500,000 from the General Education Board for the expansion program of the medical school, and \$85,000 from graduates of the School for Nurses for endowment of that school. According to *Science*, the endowment of this university \$19,386,702.91, is exceeded only by that of Harvard, Columbia, Chicago, Yale and Stanford. Its present assets include \$10,974,934.08 for the hospital and \$23,857,021.84 for the university

MASSACHUSETTS

License Revoked—The board of registration in medicine conducted a hearing, July 17, 1924, at which it decided to revoke the license of Dr Percy A Shurtleff, West Springfield, it is reported. An advertisement in the local paper set forth that the "electromedical doctors" were prepared to treat the sick by certain methods and in support of that claim certificates of alleged benefits were also published. An investigation by members of the Academy of Medicine of Springfield found Dr Shurtleff and a Dr Coll at the office of the "electromedical doctors." The board of registration specified two causes for action: association with an unregistered practitioner in carrying on the practice of medicine, and fraud in dealing with persons who asked for diagnosis. The license was revoked on the first cause and the question of fraud is on file to be taken up if occasion requires. Dr Coll, being unregistered is beyond the jurisdiction of the board but within that of the courts.

MICHIGAN

Hospital News—The Negunee Hospital, Negunee, which was damaged by fire, March 30, has been reopened. Drs John H Andrus and Horace W Sheldon are the owners.

Scarlet Fever Epidemic—It is reported that an epidemic of scarlet fever has been present in Flint and that on August 1 the number of cases was fifty-six. There are said to be also about fifteen cases in Mt Morris.

Ferris Institute Reorganized—Dr W T Dodge, Big Rapids, former president of the Michigan State Medical Society, has been elected president of Ferris Institute, which school has been reorganized on an endowment basis as a memorial to Senator Woodbridge A Ferris.

University Appoints Hospital Director—Dr Harley A Haynes, Lapeer, has been appointed director of the University Hospital, Ann Arbor, to succeed Dr Christopher G Parnall, whose resignation became effective, June 30. Dr Haynes graduated from the Homeopathic Medical School of the University of Michigan in 1902 and since 1912 has been medical superintendent of the Michigan Home and Training School at Lapeer.

MINNESOTA

Personal—Dr Walter F Bleifuss, Rochester, for the last five years deputy city health officer, has tendered his resignation to be effective October 1.

Smallpox in Minnesota—According to the state board of health, there have been 193 cases of malignant smallpox with forty deaths in the state since January 1. The disease first appeared at Duluth and spread to eight other sanitary districts in St Louis County and to Carleton, Aitkin, Martin and Lake counties, and recently to Morrison and Stearns. Of the forty deaths from malignant smallpox, thirty-four of the patients had never been successfully vaccinated. The other six had been vaccinated more than seven years before. Of the 193 cases, only two patients, neither of whom died, had been vaccinated less than seven years before. It is especially interesting to note that two of the patients who died had smallpox in childhood. In addition to the malignant smallpox, Minnesota has had 1,420 other cases of smallpox reported as nonmalignant. There have been eleven deaths in this group among the unvaccinated patients, but no deaths among patients who had ever been vaccinated. The state board of health points out that the first case of malignant smallpox was that of an itinerant laborer, in Duluth, who developed symptoms ten days after entering the state from Canada, and that his prodromal symptoms were at first thought to be due to an injury received about this time. Reports from various parts of the country show that frequently the first cases of malignant smallpox in a community are diagnosed as purpura hemorrhagica, scarlet fever or measles. Compulsory vaccination was abandoned in Minnesota in 1903, and a large part of the population now is unvaccinated. The state board warns that unless the people become protected against smallpox through vaccination, a serious epidemic may be expected.

MISSISSIPPI

University News—At a meeting of the board of trustees of the University of Mississippi, July 29, Dr Joseph O Crider, assistant dean of the school of medicine, was elected dean, Mr Lloyd E Thatcher, of the department of zoology, University of Michigan, was elected professor of biology and embryology, and Mr T E Wilson, Jr, was elected acting assistant professor of histology and physiology.

MISSOURI

Physician Sentenced—It is reported that Dr Leon Hurwitz, Joplin, has been denied a rehearing by the United States court of appeals and that he must serve a term of three years in the penitentiary and pay a fine of \$1,000 for violating the Harrison Narcotic Law. Dr Hurwitz was convicted on two counts on the same charge in the federal district court at Joplin, in June.

St Louis Enlarges Hospital Social Service—The board of aldermen of St Louis recently passed an ordinance authorizing the addition of ten social workers to the social service department of the city hospitals. The ordinance provides for a director and staff to investigate the social conditions of patients with regard to prevention of disease, suitability of their home environment for convalescence, and to determine whether they are entitled to free medical and hospital treatment.

Hospital News—Dr John M Frankenburger, Kansas City, has been appointed superintendent of the general hospital of that city to succeed Dr William L Gist who resigned. The hospital and health board have also accepted the resignations of the night superintendent and two laymen without appointing successors to fill their positions.—St Mary's Hospital, St Louis, was dedicated, June 10. This is the ninth hospital to be opened by the Sisters of St Mary, who originally came from Germany in 1871. The new institution is on an 18-acre tract and was erected at an expenditure of \$1,600,000. It has a capacity of 300 beds, which in emergency can be doubled. Dr William T Coughlin is surgeon-in-chief.—A dormitory at the home for neglected and delinquent children at Carrollton will be erected at a cost of \$50,000.

NEW YORK

Measles Closes Camp—Camp Quinipet, maintained for boys and girls on Long Island, located on Stearn's Point has been closed for the season owing to an outbreak of German measles. The children who contracted the disease are being cared for at the camp hospital.

Hospital News—The three-story addition to the Nyack Hospital, Nyack, will be erected at a cost of \$190,000.—Work will soon start on the construction of a building at St Joseph's Hospital, Syracuse, for which \$244,000 was obtained recently in pledges.—Ground has been broken for an addition to the City Hospital, Hudson.

Information Wanted—The state department of health desires information concerning the whereabouts of a person who is distributing among the farmers "an almost priceless work" designed to keep "men, women and children away from the doctor," for \$20. The distributor "Mrs Witt," is said to be posing as an agent of the state department of health.

New York City

Society Buys Home—"The Mansion" on the Colonial Road has been purchased as a home for the Bay Ridge Medical Society.

Illegal Practitioner Arrested—Dominick Stiro, with offices at 8684 Twenty-Fifth Avenue, has been arrested and held in \$500 bail for practicing medicine without a license. He examined a policewoman and charged her \$5. Stiro, it is reported has neither a diploma nor a license and is by training a barber.

Memorial to Dr Mulcahy—Physicians of Far Rockaway and the vicinity have formed a committee to seek funds for St Joseph's Hospital, Far Rockaway, which will be applied to a memorial for the late Dr William L Mulcahy in recognition of his services to humanity. The memorial will take the form of a maternity and a children's ward, the cost of which will be about \$200,000.

Sex Education in City Schools—The division of visual instruction recently invited the division of venereal diseases of the state health department to sponsor illustrated lectures on sex hygiene. The lectures were given by a representative of the U S Public Health Service during May and were illustrated by the twelve-reel film "The Science of Life." Sixty-one exhibitions were given to more than 40,000 pupils.

St Mark's Hospital Appeals for Funds—St Mark's Hospital, which serves one of the most overcrowded sections on the lower East Side is making a plea for funds to meet the growing demands made on the hospital. St Mark's has embarked on a building program, which contemplates the expenditure of \$1,250,000. The new construction is being conducted so as not to interfere with the running of the hospital.

During 1923, the hospital cared for 4,851 bed patients, and the dispensary was used to the extent of 28,411 visits

Home for Convalescent Children—The Children's Aid Society announces plans for the immediate construction of a home for convalescents in the Westchester hills near Valhalla. Boys between 10 and 16 years of age will be taken there from hospitals in New York City to recover from major operations and serious illness. Sixty acres of land have been donated to the society by Dunlevy Milbank, who in addition to the buildings now on the land, has given funds for a new building. The home will accommodate about 500 boys a year.

United Hospital Fund—The fifty-six hospitals of the United Hospital Fund during 1923 received a total income of \$17,306,152 of which 68 per cent was earned by hospital services rendered. Voluntary gifts amounted to \$2,383,844. All but a small part of the income was devoted to actual service for the 201,271 patients cared for in these hospitals, of whom 40,131 were treated free of charge. The United Hospitals in addition cared for 714,963 outpatients, who made 2,547,211 visits to the hospital dispensaries. The year's work also included 41,935 ambulance calls.

OHIO

New Inter-County Society—The recently organized Inter-County Medical Society, comprising Greene, Clinton, Warren, Highland and Fayette counties, will hold its first meeting, September 24, at Lebanon.

Personal—Dr. William B. Robinson, Mount Gilead, has been appointed, by the governor, as a member of a committee to devise plans for the rehabilitation of the northern part of the state recently devastated by a tornado.—Dr. John Dudley Dunham, Columbus, was recently appointed professor of medicine in the Ohio State University College of Medicine.

Chiropractors Lose Second Appeal—Chiropractors William J. Ryan, Emma C. Stricker, Herman J. Lohman and Frank J. Downey, all of Cincinnati, who were recently fined by the municipal court on charges of practicing without a license, lost their second appeal, August 4, when the court of appeals handed down a decision affirming the judgment of the municipal court and that of the common pleas court, which had affirmed the municipal court's action.

Fairs to Feature Health Work—The Ohio state fair, and at least twenty county fairs, will feature health exhibits this fall through the cooperation of the state and county health departments. The state fair health exhibit will be conducted by the state health department with the cooperation of the department of agriculture and the adjutant general's department. It will comprise moving pictures of health work, lectures, placards, posters, literature on sanitation and disease and an opportunity to talk with members of the staff of the state health department on health topics. The growth of interest in health in the state is indicated by the fact that last year only four counties arranged for health exhibits at their local fairs. The additional counties have been stimulated to do so by the state fair health exhibit.

Hospital News—The buildings of the new Children's Hospital, Columbus, were formally dedicated, June 16. Dr. Joel E. Goldthwait, Boston, was the principal speaker.—Contracts for the new Allen Hospital at Oberlin College, to be erected in honor of Dr. Dudley P. Allen, a former president of the Ohio State Medical Society and professor of surgery at the Western Reserve University School of Medicine, Cleveland, have been let and the building will be ready for use about next February. Two \$50,000 gifts for this hospital were a nucleus for the endowment and building funds. The balance will be appropriated by the trustees for the college from undesignated pledges. Oberlin College will take title but the building and equipment will also be used by the town. The hospital will be of hollow tile and stucco construction and will accommodate twenty-eight patients.—The Emergency Tuberculosis Hospital maintained by Stark County for the last two years was closed, July 15. Patients will be sent to other institutions until the county's new sanatorium is erected.—A new building to be used exclusively for crippled children, will be erected at Miami Valley Hospital, Dayton, at a cost of about \$50,000 and will be known as the Whitmore Memorial Building.—The selection of the site for the new \$600,000 Lima City Hospital by the city commission has resulted in an injunction brought by one commissioner, who is said to have the support of the Allen County Medical Society, a committee of which has declared that the site is 'wet, foggy, unsanitary, odoriferous and mosquito-breeding'.—The Bethesda Hospital, Zanesville, has just completed a new addition which increases its capacity to 210 beds.

OKLAHOMA

Personal—Dr. Robert C. Sullivan, Bartlesville, has been appointed health officer for Carter County. He will have charge of a cooperative health unit in Ardmore with branches at Healdton and Wilson.

SOUTH CAROLINA

Annual Public Meeting—The third annual public meeting of the Pickens County Medical Society was held at Central, July 2, with physicians of the surrounding counties and the public invited. The *Journal of the South Carolina Medical Association* commends this type of program to all other county societies for at least one annual meeting. A well equipped public school building is now available in every section of South Carolina, and may be used to advantage by the county medical society to hold public meetings.

TENNESSEE

Appointments at Vanderbilt—The board of trustees of Vanderbilt University, Nashville, have made the following appointments to the medical faculty, to take effect in 1925: Dr. Glen E. Cullen, Ph.D., associate professor of research medicine, University of Pennsylvania School of Medicine, to be professor of biologic chemistry; Dr. Ernest W. Goodpasture, director of the Singer Memorial Laboratory, Pittsburgh, to be professor of pathology; Dr. Robert Sidney Cunningham, associate professor of anatomy, Johns Hopkins University Medical Department, Baltimore, to be professor of anatomy; Dr. James M. Mill, assistant, Rockefeller Institute for Medical Research, New York, to be professor of bacteriology. During the present year, Drs. Cullen and Goodpasture will study in Europe, and Dr. Mill in this country, on grants awarded them by the General Education Board, New York, while Dr. Cunningham will continue his work at Johns Hopkins University.

TEXAS

Personal—Dr. North W. Andrews, Canton, for more than a year associate health officer of Dallas, has been elected director of public health to succeed Dr. Lane B. Cooke, Dallas, who has been appointed superintendent of the city-county hospital system.

Freshman Class at University—The number of freshman medical students to be accepted for admission to the University of Texas Department of Medicine, Galveston, will be limited hereafter to sixty. It is reported. On a recent date forty applicants for the next school session had been accepted from among ninety applications.

VIRGINIA

Gift for Scholarships—The University of Virginia Department of Medicine, Charlottesville, has received the sum of \$15,000 from an anonymous donor to establish scholarships in memory of Dr. Richard H. Whitehead, dean from 1905-1916.

Personal—Dr. Harry D. Howe, Newport News, has been appointed consulting surgeon at the National Soldiers Home, Virginia.—Dr. William M. Smith, Berryville, was elected president of the state board of health at a meeting of the new board, July 29.

WISCONSIN

Gift for Chemotherapy—The University of Wisconsin has received a gift of \$1,000 from Professor and Mrs. Edward Kremers to establish a trust fund in memory of their son for research in chemotherapy. Professor Kremers is professor of pharmaceutical chemistry and director of the pharmaceutical experiment station at the university.

Personal—Dr. Smiley Blanton, consultant in psychiatry, University of Wisconsin Medical School, Madison, has been appointed head of the department of the child guidance clinic of the University of Minnesota to succeed Dr. Lawson G. Lowrey, who goes to Cleveland.—Dr. John M. Dodd, Ashland, for nine years secretary of the state board of medical examiners, has retired from that position. The office of the board will be moved to La Crosse.

PHILIPPINE ISLANDS

Suspension of Public Health Training School—The *Revista Filipina de Medicina* states that the board of health, on account of lack of funds, is expecting to close the training school for employees of the public health service. It has

been very useful in the two years it has been established, graduating groups trained in sanitary inspection, etc. Unless appropriations are made soon by the legislature the school will close.

CANADA

Hospital News—The summer hospital built by the Toronto, Ont., Red Cross Society at Toronto Island, was opened recently by the mayor of Toronto. It will accommodate twenty-five patients, permanent inmates of Christie Street Hospital, Toronto.

University News—The University of Toronto will hold a special convocation at which the chancellor, Sir William Mulock, will confer honorary degrees on a number of the visiting members of the British Association for the Advancement of Science.

Personals—Dr. Earl D. MacPhee of the University of Alberta has accepted an appointment to the staff of the department of psychology at the University of Toronto, Toronto, Ont.—James W. Bridges, Ph.D., associate professor of psychology at the University of Toronto, has been appointed as associate professor of abnormal psychology at McGill University, Montreal, Que.—Dr. Lillian Grady, assistant physician at the St. Lawrence State Hospital, Prescott, Ont., for the last three years, has tendered her resignation, effective August 15.

GENERAL

Personal—Dr. Samuel T. Darling, Baltimore, of the International Health Board of the Rockefeller Foundation, was elected president of the American Society of Tropical Medicine at its recent annual conference in Chicago.

Conference on Pharmaceutical Research—The third annual meeting of the National Conference on Pharmaceutical Research will be held in Buffalo, August 23. Two sessions, to be attended by delegates from every state, have been planned.

Coming Meetings—The annual meeting of the New England Surgical Society will be held at Hartford, Conn., September 26-27 under the presidency of Dr. Fred B. Lund. Boston.—The annual meeting of the American Academy of Physiotherapy will be held at the Hotel Pennsylvania, New York, September 8.

International Union Against Tuberculosis—It was announced by the National Tuberculosis Association August 7, that the International Union Against Tuberculosis in annual convention at Lausanne, Switzerland has selected the United States for its 1926 convention, the city to be selected by the National Tuberculosis Association.

Coal Mine Accidents—The bureau of mines reports that accidents at coal mines in the United States, in June, resulted in the death of 161 men, which amounted to 4.22 deaths per million tons of coal mined. The rate in June, last year, was 3.73 deaths per million tons mined. The bureau of mines' report covering the first six months of 1924 shows that 1,302 men lost their lives in accidents at coal mines, of which number 1,049 were killed at bituminous mines and 253 at anthracite mines making a death rate of 4.76 per million tons compared with 3.91 for the similar period last year. A comparison of the causes of accidents in the first half of 1924 with those for the first half of 1923 shows that explosions of gas or coal dust is the only class of accidents with increased fatality rates. There were no fatal accidents in the Alaskan coal mining industry during the first five months of 1924.

Adapting Nutrition Work to a Community—The New York Association for Improving the Condition of the Poor has issued a report prepared by the superintendent of its nutrition bureau, summarizing the results of a campaign against malnutrition which has been carried on in the Mulberry district of New York City. The report states that of 2,181 apparently well children examined in the medical clinics at Mulberry Health Center, 656, or 30 per cent, were diagnosed as malnourished. During the four and one-half years of work covered in this report, intensive care was given to 1,018 malnutrition cases, and in addition the habits of all the children in the families of these special malnutrition cases were influenced. With an average of 3.8 children per family, 2,578 children received attention. Group work naturally seems more economical of time than intensive home visits, but it was extremely difficult to get these women (mostly Italians) out at stated intervals and much time was lost thereby. The average cost per visit in a home has been estimated to be 37 cents. The average cost per person per lesson where the

women were taught in groups was estimated to be 36 cents, with an average attendance of eight per lesson. At practically the same cost and with more satisfactory results from intensive work in this particular neighborhood the malnourished preschool child was handled more economically through intensive work than in groups.

Meeting of American Chemical Society—It is expected that more than a thousand delegates from universities and industrial enterprises will gather at Cornell University, Ithaca, N. Y., September 8-13, for the fall meeting of the American Chemical Society. Among others, Sir Robert Robertson, president of the Faraday Society and Sir Max Muspratt, an industrial chemist, will come from England, and S. P. Sorensen, known for work on the hydrogen ion, from Copenhagen. Sir Robert Robinson, an authority on explosives, will discuss "The Chemistry of Trinitrotoluenes" and Professor Sorensen, "Serum Globulins," at a general meeting in Bailey Hall, September 9, at which Livingston Farrand, president of Cornell University, will preside. There will be an inspection of the Baker Laboratory under the direction of Prof. L. M. Dennis, head of the Cornell Department of Chemistry, and among others a discussion of the nation's fuel supply, in which Prof. S. W. Parr, of the University of Illinois, will lead round-table conferences on "The Storage of Coal and Spontaneous Combustion." There will be a symposium on "Industrial Wastes and Their Relation to Potable Water Supplies" and the division of industrial and engineering chemistry will hold a two-day symposium on "Absorption." On the evening of September 10, Dr. Leo Hendrik Baekeland, New York, president of the American Chemical Society, will deliver the presidential address in Bailey Hall. Trips of inspection to points of industrial and scenic interest in upstate New York will close the program.

LATIN AMERICA

Typhoid Vaccination Compulsory in Cuba—A presidential decree made public August 2, makes vaccination against typhoid fever compulsory for every person in Cuba, it is reported. Although there has been a decrease in the epidemic of typhoid in Cuba, official figures show that on August 2 there were still 279 cases in Havana alone.

Personal—A banquet was recently tendered Dr. Renato Machrdo, professor of ear, nose and throat diseases at Bello Horizonte, on his removal to Rio de Janeiro. He had charge of a similar department in the Brazilian hospital at Paris during the war, and has long been on the editorial staff of the *Brazil-Medico*.—Among the interchange professors now lecturing in South America are Professor Brumpt of Paris giving a course on parasitology at Rio de Janeiro and Prof. J. Casares Gil of Madrid, lecturing at Buenos Aires on physical chemistry and laboratory technique.—A physician, Dr. Bernardo Gastelum, a gynecologist of Culiacan, Sinaloa, formerly minister to Argentina from Mexico, has been appointed chief of the department of public instruction in Mexico.

FOREIGN

Germany Prohibits Importation of Arsenical—The *Deutsche medizinische Wochenschrift* notes that the customs authorities in Germany have prohibited the importation of a French arsphenamin which the manufacturers claim is effectual by mouth in treatment of syphilis.

Women Physicians in Japan—The *Japan Medical World* states that at present there are about 1,200 women in Japan who have qualified as physicians and that the Tokyo Medical College for Girls, established in 1889, admits about 130 students each year. Until thirty years ago there were no women physicians in Japan.

Municipal Training School for Nurses—The *Wiener Medizinische Wochenschrift* states that the community of Vienna has organized a training school for nurses at the Lainz Hospital. There will be accommodations for thirty pupils for a three year course, and for sixty for a one year course for post-graduate study. The school is expected to be ready October 1.

Conference on Malaria—Eleven nations were represented at the recent international conference on malaria held at Moscow, in July, besides the malaria commission of the League of Nations. Professor Nocht of Hamburg presided, and trips were made through the malarial zones of the Balkan states and southeastern Europe. There is to be a second reunion at Rome next month to correlate the data collected.

The Mission Exposition—An important place is to be given to the medical aspect of missions in the exhibition now being

planned at the Vatican. The diseases of the countries where missions are maintained, mode of transmission, means of defense and of treatment are to be represented, and the importance of medicine as an aid in mission work. The committee in charge of the medical section includes Professors Havet of Louvain, Franchini of Bologna, Dürck of Munich, Totsuka of Tokyo and a British and an American professor yet to be appointed, with a representative of the Pasteur Institute of Paris.

The Next International Congress on Military Medicine and Pharmacy—The first congress of this kind was held at Brussels in 1921 and the second at Rome in 1923. The date for the third gathering of the kind is now announced for April 25, 1925, to convene at Paris, with Professor Vincent, the medical inspector general of the army, as president. A large committee of organization is already at work, including, besides the army and navy medical authorities, Professor Hartmann, president of the association to promote medical relations between the allied and friendly nations, and the secretaries of the surgical and urologic societies.

Personal—The *Medicina Ibera* mentions the arrival at Madrid of a party of physicians and students from North America.—Dr Enderlen, professor of surgery at Heidelberg, has been elected honorary member of the Swiss Surgical Society.—In honor of Prof G Romiti, on completion of his fiftieth year as professor of anatomy at Pisa a fund has been collected for the benefit of war orphans.—A gold medal was presented, recently, to Prof G G Perrando on the occasion of the twenty-fifth anniversary of his incumbency of the chair of forensic medicine at Genoa.—Prof L Lucatello, professor of clinical medicine and rector of the University of Padua, has been appointed to succeed Maragliano at the University of Genoa.

Midwives and Jury Service—The home secretary, England, has notified the undersheriffs that the question of legislation to secure general exemption from jury service of all midwives, in virtue of their calling will be considered when a suitable opportunity presents itself. He suggests that when undersheriffs are satisfied that a certified midwife has given notice to a local supervising authority of her intention to practice, a mark should be placed against her name in the jury book, to prevent a summons being sent to her. By the Jury's Act of 1870, peers, members of parliament, judges, clergymen, various persons engaged in the practice of law, medical practitioners, pharmaceutical chemists and various others are exempted from jury service.

Narcotics Required in China—The International Anti-Opium Association obtained statistics of the amount of opium and cocaine used for medical purposes by 100 of the largest mission hospitals in China whose attendance amounted to 850,000 patients in a year. It was found that 225 grains (14.6 gm) of 'narcotics' and 45 grains (2.9 gm) of cocaine per thousand patients were used. The *China Medical Journal* says that the year 1923 has been the worst since 1917 during the period of opium recrudescence, and that every province in China but one, Shansi, not only had unrestrained opium cultivation and use, but in many provinces the cultivation of opium was compulsory under heavy taxation and the traffic was encouraged in every way.

Medical Women's International Association—At the third conference of this association, London, July 14 under the presidency of Dr Esther Lovejoy, New York, about 300 members registered including seventy-five representatives of countries overseas among whom were women from Constantinople, Australia and Uruguay. The general meeting was largely devoted to business, as this was the first meeting of the fully constituted representative council under the amended constitution. At a preliminary meeting in New York in 1919 it was decided to form a worldwide association of medical women. The constitution was discussed at the second meeting in Geneva, in 1922, and at the present meeting the necessary by-laws were added. At the scientific session July 17 among others Lady Barrett the president-elect read a paper on 'Maternal Morbidity'. The conference opened with a reception at the Royal Society of Medicine, July 14.

The Lancet Luncheon—A luncheon was given by *The Lancet* at the Hotel Victoria, London July 17, to overseas medical representatives who were visiting England in connection with the British Empire Exhibition. About sixty guests accepted the invitation. Sir Ernest Hodder-Williams, chairman of *The Lancet* presided. Sir Squire Sprigge the editor pointed out that in a copy of *The Lancet* of a little more than 100 years ago he found the first foreign communication the appearance of which was considered by the editorial staff of that day a great event. Now, he said, the publication of foreign correspondence from almost every part of the globe was a weekly incident, but that this could not be done if it were not for the extraordinary good will of the people at the peripheral centers towards those at the old center, only by that kind of cooperation could such papers as *The Journal of the American Medical Association*, *British Medical Journal* or *The Lancet* be produced.

Epidemic Poliomyelitis in Switzerland—The *Schweizerische medizinische Wochenschrift* gives the official statistics on epidemic poliomyelitis in Switzerland in 1923. A total of 257 cases were reported, over twice as many as ever known before in the country. In Lucerne the disease assumed a malignant character, and the public health service summoned a conference of physicians who had had to deal with such cases. Stooß emphasized that previously the disease had never assumed an epidemic form, the small groups not spreading and only small children being affected. In the Lucerne and Sattel epidemics last year, older children and adults contracted the disease in house and family epidemics, and it assumed a graver, cerebral form. Stirnimma and Dopfner presented evidence incriminating *Stomoxys calcitrans* in the transmission of the disease. Several speakers stated that the official figures were far too small. It was decided to publish a circular for the public and one for physicians, advocating isolation for four weeks, keeping child contacts under 12 out of school for four weeks, and closing of classes, creches, etc., for two weeks after a case has developed in the institution.

Annual Meeting of British Medical Association—At the ninety-second annual meeting of this association at Bradford, July 18 the president-elect, J Basil Hall introduced the lord mayor of Bradford, the town clerk and an alderman, who were present to welcome the association on its first visit to Bradford. After some formal business, Lieutenant-Colonel O Kinealy was elected to represent the Indian Medical Service on the British Medical Association Council, 1924-1927. Dr G E Haslip retiring as treasurer on account of ill health was elected a vice president, and Mr N Bishop Harman was elected treasurer. Dr F G Thomson of Bath was elected president of the association for 1925-1926, and the next annual meeting place was fixed at Nottingham. The acting treasurer Dr R A Bolan, gave an account of the association's new home which it is proposed to enter in March 1925, without ceremony, the formal opening to take place a few days before the annual meeting later in the year. Dr S Morton Mackenzie, chairman of the organization committee, said that the total membership of the association to date was 27,533 the highest number yet recorded. Nearly 2800 new members joined last year attracted, he thought, by the willingness of the association to take up anything to help its members. Dr H B Brackenbury was elected chairman of the representative body. Twelve members of the council were elected by grouped representatives and four by the representative body from among its members for nomination as direct representatives to the General Medical Council.

Deaths in Other Countries

Dr Edoardo Bassini, senator and emeritus professor of surgery at the University of Padua, aged 80. He was a frequent contributor to the progress of surgery, and his name is connected with the operation for hernia which introduced a new principle of reconstruction.—Dr G Geley, director of the International Institute for Metapsychics at Warsaw, and of the *Revue de metapsychique* was killed in the fall of an aeroplane.—Dr Debecker of Brussels, administrator of the medical life insurance society La Medicale.—Dr D Ramos at Rio de Janeiro, formerly director of the medical faculty at Bahia and of the local public health service.—Dr J Pondé, professor of ophthalmology at Bahia.—Dr M H Alcivar, rector of the University of Guayaquil, professor of surgery and former president and one of the founders of the Sociedad Medico-Quirurgica, aged 56. The entire issue of the July *Anales* is devoted to the addresses and tributes to his memory at home and abroad.—Dr E Meissen, director of a sanatorium for the tuberculous in Germany, aged 70.—Dr K Hubscher, professor of orthopedics at Basel.—Dr I Larraín, one of the oldest physicians of Buenos Aires.—Dr Muntendam Not Dead.—*THE JOURNAL* August 2, p 368 announced through error, the death of Dr P Muntendam assistant editor of the *Nederlandsch Tijdschrift voor Geneeskunde*. Tributes were being paid to him for a quarter century of work on the *Tijdschrift*, not obituary tributes and it seems his "disappearance" was only to avoid the public tribute.

Government Services

Field Work at Carlisle Barracks

Carlisle Barracks, Pa., the home of the Medical Field Service School, and the First Medical Regiment, is the largest medical training center of the army. It has a permanent personnel of twenty-three officers and 475 enlisted men of the medical department. Lieut Col Charles R Reynolds, M C, is commandant. The functions of this station include training young officers of the medical department of the regular army, and medical, dental and veterinary officers of the National Guard and the Reserve Corps. It conducts annually the large medical reserve officers' training camp, the students coming from practically all the large colleges located east of the Mississippi. Carlisle provides the chief element of training for field service in furthering preparedness plans of the Surgeon General. The latest methods of collecting, transporting and hospitalizing the sick and wounded under simulated battle conditions receive the most careful consideration and study. Carlisle in the last few weeks has been the site of the largest medical training camp held since the World War, the regular garrison having been augmented by more than 400 medical department R O T C students, 300 reserve corps officers of the medical department, and about 300 officers and enlisted men comprising the One Hundred and Fourth Medical Regiment of the Maryland and Virginia National Guard, all encamped on the grounds at Carlisle. The Surgeon General, with members of his staff, witnessed a maneuver in which approximately 1,200 individuals of the medical department participated on a line of about 6 miles. Battalion and regimental aid stations, collecting stations, ambulance stations, and hospital station were manned by members of the student body comprising the R O T C camp, aided by the One Hundred and Fourth Medical Regiment of the National Guard. The reserve officers in camp were conducted over the entire route of evacuation, and at each "station" were given a brief talk by the officer in charge. This maneuver, with two medical regiments participating, embraced the largest number of medical department personnel ever assembled at one time during peace.

Among the medical reserve officers in camp were Deans Pepper, Patterson, Huggins, Begg, McLeroy and Lye. Brig-Gen Joel E Goldthwait, M O R C, Harvard University, gave a lecture on "Benefits to Be Derived from Military Training."

Through a loud speaking device, General Ireland addressed the entire group of trainees outlining the preparedness plans of the Surgeon General, and stressing the relations that should exist between civil practitioners and regular army officers of the medical department. He stated that this was the first time he had had the pleasure of addressing in one assembly members of the regular army, the National Guard, the Reserve Corps, and the students of the R O T C units. Following his address, General Ireland witnessed a review of the entire command. Several thousand visitors from neighboring cities of Pennsylvania and adjacent states attended.

Executive Committee of Veterans' Bureau Council

The Council of Medical and Hospital Affairs appointed by the director of the Veterans' Bureau from medical authorities throughout the United States, in session at Washington, D C, July 22-24, was called for the purpose of acting in an advisory capacity on problems that arise in caring for 23,000 patients hospitalized by the bureau. The council divided itself into four divisions, neuropsychiatric, tuberculosis, general medicine and surgery, and hospitalization, the last two acting as one division. Dr Daniel J McCarthy, Philadelphia, was selected chairman of the neuropsychiatric division, and Dr George M Kline, Boston, secretary. Dr Roy D Adams, Washington, D C, and Dr Harry A Pattison, New York, were made chairman and secretary, respectively, of the tuberculosis section, while Col R U Patterson, M D, Washington, D C, and Dr Louis I Dublin, New York, were made chairman and secretary, respectively, of the two last divisions. The chairman of the standing committees with the officers of the council form the executive committee, which will function as a permanent organization. Officers of each division will be permanent officers and will function as such between conferences.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 25 1924

Annual Meeting of the British Medical Association

The ninety-second annual meeting of the British Medical Association was held at Bradford, an important Yorkshire town and center of the woollen industry. About 1,000 members attended. At the representative meeting some subjects of great importance were discussed, such as the protection of physicians from litigation as the result of certification. A resolution was moved that the provision of a certificate under the lunacy acts by a physician should have the legal testimony status of testimony given in a court of law, and should not render the physician liable either to any civil action or to any criminal charge, except so far as the certificate may be shown to contain statements of essential importance, which are proved to be inaccurate and to have been made with intention to deceive. It was pointed out that the responsibility of certifying was accepted by the profession largely in the public interest, and was heavy and obnoxious. As the law was, the profession alone stood between the community and the person of unsound mind and by it alone was that person protected against himself. Though there was no legal compulsion on the physician to sign a certificate of insanity, the moral pressure was such that he had to do so. The law recognized that the certification was a public service, by providing some protection. Thus no action against the physician could succeed if the physician was able to show that he had acted "in good faith and with reasonable care." But this did not entirely prevent the physician from being harassed by actions. The resolution proposed to make the protection complete. The resolution was carried unanimously.

MEDICAL DEFENSE

A resolution was presented that, in view of the increasing need for legal defense, the association should undertake the work. It was pointed out that less than 50 per cent of physicians were members of the three medical defense societies. The commercial insurance companies were entering the field and offering for a premium of \$5, an unlimited guarantee against liability. Presumably they had some actuarial calculation by which they concluded that they could make a profit. Why, therefore, should the association not undertake the work? In opposition, it was pointed out that the existing defense societies were doing their work well, that a division of the association was an unsuitable place to deal with difficult claims, because local prejudices would be introduced. Unwelcome advice had often to be given by the defense societies, furthermore, if it was known that the association was defending actions against its members, heavier penalties would be inflicted than against individual physicians, finally, the financial responsibility undertaken would be great. The motion was lost.

ORGANIZATION OF THE ASSOCIATION

It was announced that the total membership to date was 27,533, the highest number yet recorded. Last year, nearly 2,800 new members joined, attracted by the proved willingness of the association to take up anything to help its members. The handbook for recently qualified medical practitioners was proving useful in recruiting, and was being distributed gratis to those attending the social meetings of welcome at teaching centers. At Newcastle-on-Tyne, during the last two years, every newly qualified physician had joined. Prizes for essays on clinical or pathologic subjects were being offered to final-year students. In South Africa, although a referendum of

the whole profession had shown a majority of 190 out of 1,288 voting in favor of the formation of an affiliated South African medical association, a second referendum of members of the South African branches of the association resulted in seven out of the ten branches (with a total membership of 700) voting against the formation of a new association. A motion was introduced disapproving of the Council's suggestion to dispense with approving signatures on forms of application for membership, and affirming that such signatures are a safeguard against the division or branch being exploited by individuals unworthy of becoming members. In the discussion, it was contended that an approving signature had not kept out undesirable members. The meeting rejected the resolution on the assurance that every divisional secretary should be an *ex officio* member of the branch council which admits applicants. It was proposed that of the eight members of the British Medical Association council elected by the representative body, at least one shall be a woman. A woman member of the council stated on behalf of the women members of the association, that they recognized that the association was a democracy with no sex bar and that they preferred to stand without privilege. There were, in fact, three women present as representatives of divisions or branches. The resolution was withdrawn.

PAYMENT OF PHYSICIANS FOR SERVICES IN VOLUNTARY HOSPITALS

A resolution was introduced that "where the board of a voluntary hospital receives contributions from individuals in return for or in anticipation of treatment, the members of the visiting medical staffs should receive recognition of their services, either in the form of an agreed honorarium or by means of a percentage of all such payments being passed into a special fund. Such honorarium or fund can be allocated in any manner which the visiting medical staff may determine." After a long discussion, this resolution was carried.

THE BRITISH MEDICAL ASSOCIATION AND THE CANADIAN ASSOCIATION

The delegates who recently visited Canada to discuss affiliation with the Canadian Medical Association presented their report, which was received with acclamation. A resolution was carried unanimously: "That the representative body has heard with extreme gratification the report of the delegates on the cordial welcome given by the Canadian Medical Association to the proposals for affiliation, and empowers the council to carry these proposals into effect."

THE PRESIDENTIAL ADDRESS

Mr J Basil Hall, honorary consulting surgeon to the Bradford Infirmary delivered an eloquent presidential address containing important admonitions on present day tendencies. He did not think that recent military experiences had done much to advance professional usefulness in dealing with sickness in civil life. The whole war period brought into focus an exaggerated idea of the importance of surgical technique, and cramped the development of surgical judgment. The treatment of every injury and every disease became standardized. It was a bad training for the newly qualified student of medicine, each became a mere cogwheel in a great machine designed to fulfil a special purpose. During the most impressionable period of their career, they worked in the midst of all the sensational excitement associated with military service, and civil practice was now an irksome task for them. Hence was largely derived the widespread desire to practice some form of specialism, which had become an idol. To the layman the term 'specialist' had become a cabalistic word which he repeated on every possible occasion. There was however one specialism which he frequently failed to appreciate at its proper value—the specialism of general

practice. It required more knowledge of human nature and more experience over a wide field of observation to make a first-class general practitioner than the public had any cognizance of. Clinical observation threatened to become a lost art, and radiography and all the modern scientific methods were good servants, but bad masters. Their present failing was an overconfidence in modern technic and a lack of the appreciation of the value of that wisdom which could be obtained only by personal observation and experience. He urged those of the younger generation to think more and observe more for themselves, as their forefathers did, and not be so ready to bow the knee in a fanatical worship of so called scientific methods of investigation. Experience begotten by patient observation would teach them the real value of scientific methods, and their limitations.

TISSUE CULTURE AND PATHOLOGIC PROBLEMS

Dr Alexis Carrel of the Rockefeller Institute, New York, reported that the method of tissue culture, although still in its infancy, was already a powerful instrument for the investigation of the relations of the tissues and the humors. Tissues grew not in accordance with inherited energy, but in accordance with the growth-favoring or growth-retarding elements in their environment. As long as the proper amount of food material was given to connective and epithelial tissues, and their waste products were removed, growth went on. Thus some tissues could be considered as potentially immortal. He had a strain of fibroblasts, which he obtained more than twelve years ago, fully as active today as at the end of the first year. The important discovery that blood serum actually retards growth had been made by using the method of tissue culture. Serum contained two antagonistic principles—growth-restraining and growth-promoting substances. The growth-promoting ones were always weaker than the growth-restraining, hence the depressing action on tissue growth of the serum. This growth-restraining power of serum varied, too with the age of the animal, being least in early youth. In old age, growth-promoting power was gradually lost. While the blood serum retards growth, certain of the white blood corpuscles stimulate it by enabling the cells of the body to nourish themselves, and so become larger. These corpuscles the lymphocytes, may be looked on as tiny, free-moving glands, which bring to the fixed or nonmoving cells the principles necessary to their growth. Such principles are abundantly present in the bodies of growing embryos, and are spoken of as trephones. In adult life, they seem to be stored in the white corpuscles, which can release them as occasion demands, e.g., when growth is required to heal and fill up a wound, or when a broken bone has to be 'joined' again. Thus, the white corpuscles of the blood have a double function—to defend the body against bacteria (as "warrior cells") and to promote growth where it is necessary for the purpose of repair. The stimulus to pathologic growth might consist of trephones—growth-promoting substances—coming from the leukocytes, or set free by dead muscle or gland cells which was foreseen by Welch many years ago. That idea explained the mechanism of wound healing. It was known that a perfectly clean wound a wound free from debris of tissue and blood clots, and absolutely protected from outside irritation, did not heal. But if some irritation—for example, dry gauze or turpentine or the presence of a few bacteria—were at work, the wound healed. Irritation, even mild irritation, brought white blood corpuscles to the seat of the wound, and these supplied the necessary growth-promoting substances.

THE IMPORTANCE OF MINERAL ELEMENTS IN DIET

Dr John Boyd Orr, director of the Rowett Research Institute Aberdeen, pointed out that during the last few years there had been a tendency to regard the evil effects of too exclusive a use of certain refined foodstuffs as due chiefly or

entirely to a deficiency of vitamins. Recent work, however, had shown that many of the evil effects might be attributed to a lack of correspondence between the mineral content of the diet and the mineral requirement of the body. Of the fifteen chemical elements making up the body, ten were mineral elements, and each of these was known to perform functions that could not be adequately performed by any of the others. All these minerals were continually being lost from the body in the excretions, and all were required as the constructive material of growth. The dietary of a large part of the populations in this country, especially in the cities, consists mainly of cereal products and other carbohydrate-rich foodstuffs, such as potatoes and farinaceous foods, because they are the cheapest sources of energy. The most common supplements are meat and butter or margarine. The average per capita consumption of milk is only about half a pint daily, and in many households green vegetables do not form a regular part of the diet. Hence the foods that form the greater part of the diet are those deficient in both calcium and iron. It has been estimated that 50 per cent of American dietaries contain less than 0.67 per cent of calcium, which is well below the standard of 1 gm a day. In England, the average intake is likely to be even lower, because the average consumption of milk, usually the chief source of calcium in the diet, is twice as high in America as it is in Britain. Fortunately, mineral deficiencies can be easily corrected by food, the virtues of which are universally recognized. Milk, green vegetables and certain fruits are rich in calcium, milk, egg yolk and cereals containing sufficient of the embryo and outer part of the grain are rich in phosphorus. Green vegetables and egg yolk are rich in iron. The only sources of iodine are green vegetables and cod liver oil. Fruits and vegetables have an excess of alkali, and can thus correct a diet that is too acid. On account of its great wealth of calcium and iron, spinach should be of especial value for infants. These foodstuffs, which are rich in inorganic constituents, liable to be deficient in the modern diet, are also rich in vitamins. Much of the beneficial effect is ascribed to hypothetical vitamins. As the mineral matter of the ration becomes more closely adjusted to the requirements of the body, the need for vitamins decreases. Therefore, the adjustment of the mineral balance is of more importance than the inclusion in the diet of substances supposed to be rich in vitamins. Indeed, experiments with pigs, calves and fowls have shown that if the diet is properly balanced with regard to minerals, there is no likelihood of any deficiency of vitamins occurring.

Defective Feeding in Psychopathic Hospitals

The departmental committee appointed to inquire into the diets of patients in psychopathic hospitals has issued its report. It recommends that there should be more uniformity in the construction of the dietary scales, especially with regard to the character of the food, its total amount, the amount of certain staple articles and the avoidance of monotony. It is further recommended that to insure the presence in dietaries of necessary accessory food factors (vitamins) there should be a partial reinstatement of butter as a regular article of diet, a supply of milk in greater quantity, an increased provision of green and other fresh vegetables, a more common use of eggs, a free administration of salads and fresh fruit, and a more general use of whole flour and germ bread. Under proper conditions, the cost of this dietary at present prices should not exceed 17 cents per capita daily for county psychopathic hospitals and 17.5 cents for borough psychopathic hospitals. The committee thinks that insufficient attention is now paid to palatability and attractiveness of food, especially in the matter of variety. Some of the diets examined were inadequate, some excessive. There was an increase of tuberculosis among males in the twelve institutions providing dietaries of the lowest arithmetical values.

PARIS

(From Our Regular Correspondent)

July 18, 1924

The Centenary of Paul Broca

The Societe d'anthropologie of Paris has just celebrated the centenary of the birth of its founder, Prof Paul Broca. Dr Dubreuil-Chambardel, professor of anatomy at the Ecole de medecine of Tours and vice president of the Societe d'anthropologie, presided at the ceremonies. Dr Manouvrier, now professor at the Ecole d'anthropologie and who was the preparator of Broca during the last years of his life, sketched the scientific career of Broca, who was not only an eminent surgeon but also a skilful instructor and an enlivening lecturer in anthropology. He it was who, before he had reached the age of 40, founded the Societe d'anthropologie of Paris, which was destined to become a model for anthropological societies in other countries. Later, Broca founded the Ecole d'anthropologie and the *Archives d'anthropologie*. He was an indefatigable worker and is the author of numerous works, notably, on the morphology of the brain. The part that he played in the investigation of motor or ataxic aphasia is well known. He ascribed the defect to a lesion at the base of the third left frontal convolution, which has since been named Broca's convolution.

Vocational Guidance in Schools

Drs R. Laufer and G. Paul Boncour recently presented before the Academie des sciences morales et politiques an interesting communication on the subject of vocational guidance in schools. From the researches that they have carried out with many groups of pupils, comprising several hundred in all, to determine to what extent their aptitudes corresponded to the trades and occupations they desired to enter, three definite conclusions were reached. (1) A large number of remediable affections change the physical and mental qualifications of the pupils, (2) the elements of character and morals are likewise associated with aptitudes that are subject to morbid influences, 66 per cent of the pupils presenting pathologic states are affected also by weaknesses of character, which should, therefore, be studied with as much care as the physical aptitudes, (3) only from 10 to 15 per cent of the children were really adapted to the occupations that they had chosen. Six per cent were found to have tuberculous defects.

Mental Pathology in Modern Literature, More Especially, the Novel

Mental pathology seems to be quite a la mode in literature, and the theories of Freud have become for writers of the drama and the novel a mine, which they have exploited almost ferociously. As a rule, the authors of these works unfortunately display great ignorance in medical matters. It is quite a different thing when a work of fiction is written by a physician, as is the case with *Notre-Dame de la Sagesse*, a novel by Pierre Dominique. As previously mentioned, this is the pen name of Dr Pierre Lucchini. The principal personage of his novel, Thibaut, is a young intellectual who is subject to a mystical delirium with a paranoiac basis. After studying and securing the degree of licentiate in belles-lettres, the young man divides his fortune among members of the humble class and becomes an ordinary ditch digger. His family then intervenes and has him put in the asylum at Villejuif. He plays the part of a victim of persecution, and his revolutionary and generous ideas, joined with his facility of speech characteristic of those suffering from ideas of grandeur, secure for him adherents even in the asylum. But the greatest adept is Margot, a girl who has a wretched and pitiable childhood back of her. Her weak and half cultivated mind is attracted by the anarchistic theories of Thibaut, and she helps him to make his escape from the asylum. Thibaut finds his writings

universally admired and is regarded as a great man. There is a subtle irony in the divergence between the portraits of Thibaut as seen by physicians and as viewed by the eyes of laymen.

Illegal Practice of Medicine

In previous letters, I have mentioned the indulgence shown by French courts on many occasions toward all kinds of illegal practitioners. Recently, it is true, the court of Compiègne sentenced one, "Father Bar," to pay a fine of 500 francs. But, in another case of the same kind, in which a "Father Benoist" figured, the court of Amiens limited itself to a fine of 1 franc, but suspended the sentence. Worse than that, the indulgence of the court of Amiens was manifested in a series of 'extenuating circumstances.' Benoist is guilty, it is true, of the illegal practice of medicine, but, though he is 66 years old, he has never had a sentence imposed on him, he is universally respected in the community, he has never enriched himself by the application of his methods, his purpose was mainly philanthropic! These extenuating circumstances were, of course, published in the daily press, which also did not fail to express its sympathy for him. One well known journalist, Clement Vautel, in discussing the subject, stated "The healers who treat their patients with herbs, magnetic passes or diabolic incantations are, on the whole, less of a menace to public health than certain specialists with an array of diplomas who put up their misleading, charlatanic posters in the comfort stations." In reply, Dr. G. Duchesne, secretary of the editorial staff of the *Concours medical* calls attention to the fact that the comfort stations no longer contain such posters but that, on that account, the last page of large dailies fairly bristles with the advertisements of such charlatans. Dr. Duchesne reproduces a column of such advertisements taken from the same number of the journal in which appeared the article of Clement Vautel. Herein, sufferers from syphilis and gonorrhea are promised marvelous cures. Distance is no obstacle. If you live too far away, write, giving details of your condition, to the chief physician, who will prescribe for you, free of charge in a plain envelop the energetic treatment needed in your case. "It would appear therefore," says Duchesne, that the front page of the journal has a dignified, moral tone, while the last pages give space to the immoral publicity that is stigmatized on the first page. If we are going to clean house, the place to begin is the press."

Shackles that Hinder the Expansion of Scientific Journals

In official circles, it is a common thing to recommend to scientific societies to send their bulletins and reports of proceedings to foreign countries, to solicit exchanges with similar societies in other countries, and to be generous in the distribution of documents without even demanding similar courtesies in return—all with the view of extending the knowledge of French science abroad. But quite recently, a decree of the postoffice department has increased by 33 per cent the rate of postage on journals going to foreign countries. A journal weighing 65 gm., which could be sent for 5 centimes, before the war costs today 30 centimes postage. By multiplying this rate by the total subscription, it will be readily seen that this increase means, in the aggregate, a heavy additional load for publishers. The *Gazette hebdomadaire des sciences médicales de Bordeaux* complains bitterly of the new postal rate, introduced in the middle of the year, at a time when the subscription price can no longer be changed. It appears evident that a number of scientific journals will in the nature of the case, be compelled to reduce their free exchanges with foreign countries. The daily papers, the *Gazette* remarks, will not suffer especially from the increased tariff. They will soon make up their losses with the sums paid them for the advertisements of special institutes where, in a few hours, all blood taints may be

cured by vegetable and other products. If it is necessary to find other sources of income, would it not be more rational to impose a formidable tax on medical advertisements and posters of the aforementioned type, which are diametrically opposed to the scientific, hygienic and moral interests of the country?

Death of Dr. Adolphe Jalaguier

Dr. Jean Adolphe Prosper Jalaguier, formerly agrege professor at the Faculty of Medicine of Paris and honorary surgeon to the hospitals, has died at Poupel, near Montauban, at the age of 71. Jalaguier was born at Montauban, March 24, 1853. He entered the University of Paris for his medical training, and was graduated in medicine in 1880, becoming a surgeon to the hospitals in 1884. Two years later, he was appointed agrege professor. When the chair of clinic of surgical diseases of children was created, on which he had some claim, many professors thought he was the logical choice for the post. But the mere perspective of the official duties that he would be required to assume seems to have appalled him, so that he yielded his claims to Kirmisson. He was an excellent clinician and a skilful operator. He specialized in pediatric surgery, which he enriched by his own technic, for example, his procedures for the cure of harelip, congenital and paralytic clubfoot, coxalgia, etc. According to Prof. J. L. Faure, he was one of the first to see clearly into the problem of appendicitis, and, along with Walter, he revealed the frequency of chronic appendicitis without critical attacks and sometimes even without pain. He established the modes of intervention in a paper presented in 1900 before the International Congress of Medical Sciences. He was the first surgeon in France to operate with gloves. He was unanimously elected president of the *Societe de chirurgie*, and, since 1912, he had been a member of the Academy of Medicine. During the war, he had charge of the surgical service for officers in the Military Hospital of Val-de-Grace.

The League of Nations and the Campaign Against Malaria

Malaria is at present prevalent in many countries of Europe. In Russia, endemic malaria has spread, in recent months, to an alarming extent. There are foci of malaria along the Baltic, in Poland, Sweden and Germany, they are found also in Holland, along the borders of the Scheldt, likewise in Ireland. Malaria has become entrenched along the European coast of the Mediterranean, the eastern coast of Spain, Corsica, the shores of Italy, Sicily, Greece, and Turkey in Europe. Central Europe has been invaded, likewise, Austria throughout the valley of the lower Danube and its tributaries—Dalmatia, Herzegovina, Bosnia, southern Russia, and the Balkan states. In France, to be sure, malaria has almost disappeared, but the war has shown that it is possible for it to spring up again under exceptional conditions.

In view of this state of affairs and of the possibility of bringing about an effective prophylaxis, the Health Committee of the League of Nations has appointed a commission for a threefold task: (1) to collect information concerning the malaria situation throughout the world and particularly in Europe, (2) according to collected information to compare the prophylactic methods employed in various countries, with a view to discovering which methods give the best results, (3) to prepare replies to the questions on this subject which may be addressed to the Health Committee. In order to secure as reliable information as possible on malaria, this commission, on which France is represented by Dr. Leon Bernard, professor at the Faculty of Medicine of Paris, and Dr. Marchoux, professor at the Pasteur Institute, has prepared a list of questions which will be sent to the competent authorities in the different countries, together with a circular letter explaining the purpose in view, and urging that in every

country a qualified expert be appointed charged with collecting the information required. It will also be stated that the Health Committee of the League of Nations will place a specialist at the disposal of any country that cannot supply one. The questions bear, on the one hand, on epidemiologic information concerning the malaria situation, including morbidity, mortality, malarigene factors, social factors, *Anopheles* and the evolution of endemic malaria, and, on the other hand, on information concerning the prophylaxis of malaria—organization of the antimalarial campaign, prophylaxis through quinin administration, therapeutics, etc. This questionnaire will be prepared by expert malariologists, and, in addition to detailed questions, will outline model methods of prophylaxis so that the mere sending of it has marked instructional value. The commission is in hopes that the replies from the various countries will furnish abundant and accurate information. If incomplete returns are sent in by certain countries, this fact will be interpreted as an indication why malaria is spreading. It is probable that when the statistical tables are published and contain blank columns showing the insufficient character of the replies from certain countries, a sense of pride will induce these to make up their deficiencies. The conclusions drawn by the commission from the information received will make it possible to plan a general program of prophylaxis. Furthermore, once it has this information in hand, the commission will be in a position to offer useful suggestions whereby prophylactic arrangements in a given state may be improved. The commission will not limit its activities to this task. It plans also to send experts into the field to institute an inquiry on the ground on the subject of the disappearance or the diminution of malaria in some sections in spite of the persistence of *Anopheles*.

VIENNA

(From Our Regular Correspondent)

July 12, 1924

Opening of the New University Building at Innsbruck

The new university building, which had been commenced in 1914, but which could not be completed during the war, was opened with great solemnity, June 28. The new building succeeds the old one, which dates back to the sixteenth century, and which was antiquated. The hygienic arrangements, and the accommodations for laboratory work and for other research were sorely behind the requirements of our time. There are accommodations for administration as well as for all studies except the purely medical. The latter have to be pursued at the bedside in the old clinical hospitals. The costs of the new building were defrayed by the state, only a small percentage of the actual expenditure being contributed by the municipal and county authorities.

Statistics of Austrian Medical Students

According to official reports for 1923, the following numbers of medical students had been matriculated in the Austrian universities in the winter term 1923-1924: in Vienna 2,943, of whom 623, or 21 per cent, were in their first semester, in Graz, 1,105, with ninety-nine "first-year" students (9 per cent), Innsbruck, 422, with forty-six (10 per cent). We have only these three medical universities, with a total of 4,470 students (768, or 17 per cent of these being in their first year) for a population of six and one half millions. This compares with 12,500 students in the twenty-four universities in Germany, with only 530 first year students (or 4.25 per cent) out of a population of 60,000,000. Vienna alone has more medical students than Berlin and Munich together, and more first-year students than all Germany put together. This remarkable feature is explained by the fact that students from the Balkans and eastern Europe taking up medicine flock to Vienna. In fact, if we consider Austrian citizenship

among all the students of medicine in Vienna, we find that only 42 per cent of them are Austrian born, and only 28 per cent of those in the first year. This relative overcrowding in our medical institutions has been responsible for the cry of "numerus clausus" so often raised by men imbued with a certain racial or national prejudice, but which heretofore it was always possible to counteract.

Exhibits of Insects of Medical Interest

The zoological department of the Vienna museum of natural history opened recently a collection of insects and their relatives having a bearing on medicine. The whole exhibit is divided into six groups and shows which of these organisms exerts a disease-producing action on human beings or animals (1) by means of the secretions of its glands, (2) by means of fairs, (3) by poisonous appendages, (4) by sucking the blood, (5) by parasitism, or (6) by transmitting disease germs. The entire life cycle of these organisms, as far as it is known, is shown in a series of specimens arranged so as to reproduce the natural conditions, and short but concise explanations are placed in each receptacle. The organisms that are too small to be well visible with the naked eye are represented in colored photographic enlargements. Once a week, expert guidance is provided. The entire collection comprises about 6,000 specimens.

The Problems of Modern Welfare Care for Infants and Children

In a paper read before the Ethical Society, Professor Tandler recently discussed the problems opened up by the modern views of the bringing up of children, chiefly of the poorer classes of the population. He pointed out that out of 100 offspring of the proletarian families only forty-nine reach the sixteenth year while in the wealthier classes, eighty offspring survive at that age period. Before the war in the obstetric clinics, 75 per cent of the births were illegitimate, and 25 per cent legitimate. Now the condition is exactly the reverse. Housing conditions are mainly responsible. But this in itself is a potent factor in insuring systematic care being taken of the baby, and of its mother before she has been delivered of this child. By what precautions might it be effected that only healthy children are born? The municipality of Vienna has undertaken the task of having all pregnant women examined as to syphilis and mental diseases and at present about 50 per cent of all these presumptive mothers are controlled. All hygienic and prophylactic measures of this kind must have one object in mind. The welfare of the future generation.

Statistics on Persons Insurable Against Sickness

There has been a law in Austria since 1888 which makes insurance against sickness compulsory for all persons who receive wages or a salary, up to a fixed sum of money, for monthly, weekly or daily work. It has been always the endeavor of the medical profession to keep the wage limit that entitles one to insurance as low as possible, and a fight is still raging between the government and the profession on that point. It is interesting to know how many people at present come under this law. We have a total of 221 *Krankenkassen* in our republic, comprising 1,524,546 members (Jan 1, 1924). There exists, in addition, a *Krankenkasse* for (1) persons in state service, (2) in railway service, and (3) persons employed by the municipality of Vienna. The latter institutions insure not only the officers of the respective corporations, but also their dependents who live in the same household. All of these make a sum total of 2,316,519 insured persons, of which the last three services comprise, respectively, (1) 175,728 members, 209,427 family members, (2) 150,000, 179,000, (3) 36,119, 41,699. As the total population of Vienna is 1,800,000 of whom 1,100,000 are insured (by

60 per cent), and as all Austria has 6,500,000 inhabitants, with 2,300,000 insured (35 per cent), it is evident that private practice is much more handicapped in the capital than in the country.

The Housing of Tuberculous Patients in Sanatoriums

In lectures on tuberculosis delivered by Professor Schiff and Dr. Gotzl at recent meetings of the Vienna Medical Society, figures were presented on the number of beds available for tuberculous patients in Austria. It appears that the number of sanatorium beds is far from being satisfactory at present, although not all the institutions are on a profit basis, especially those of the state. The provisions for private patients are better than for the members insured against sickness. There are, all told, 5,100 beds devoted solely to tuberculous patients, and of these 3,000 are owned by Vienna corporations. It is interesting to compare the number of insurance members and sanatorium beds. We find that 1,100,000 insured persons must be accommodated, when ill, in 1,765 beds, and that the remaining 700,000 people of Vienna have at their disposal 1,365 beds. In 1923 in Vienna 4,630 persons died of tuberculosis. We calculate the number requiring treatment in sanatoriums at five times as many, or 24,000, so that about eight persons in the private institutes have to occupy each bed each year. This means a stay of six weeks for each patient, if all patients are accommodated, a period decidedly too short, in other words, we need many more beds than we have at present. Regarding the condition of patients sent to sanatoriums, Dr. Holter said that often patients expect to be admitted who are too far advanced to be permanently benefited or cured by their stay. It is chiefly the wage earner who, being afraid to stop earning because of the family, comes too late. In 1923, in one institute, 140 patients out of 463 who applied for admission had to be dismissed after a short stay because they were too far advanced. On the other hand patients often give their temperature wrong and complain falsely of night sweats in order to prolong their stay, and thus occupy beds that should be used for severer cases.

BERLIN

(From Our Regular Correspondent)

July 12, 1924

New Types of Welfare Centers

The city of Munich established recently a consultation and welfare center for the mentally sick. Its purpose is to give aid and advice to the mentally sick who have been released from institutional care and supervision. They will be helped to secure employment, and an endeavor will be made to prevent recurrences as far as possible. To attain this end, medical consultation hours are provided and the patients are visited in their homes which affords an opportunity to advise with the other members of the family. The domiciliary visits are usually made by a welfare worker (commonly a woman) associated with the welfare physicians. The services of the welfare center are gratuitous.

A similar welfare center for the mentally sick including the feeble-minded and psychopaths, has been created in Stettin.

Another innovation is the establishment in Berlin of a public consultation center on marriage relations. It is located in the Institute for Sexual Science founded and conducted by the sexologist Magnus Hirschfeld. Persons contemplating marriage are advised (1) with respect to their personal health and adaptation for marriage in general, (2) in regard to their sexual fitness as spouse and (3) relative to their eugenic adaptation as parents. Advice is given also with reference to marital difficulties of a sexual or of a general psychic character as well as in all questions pertaining to

the training of children, from the physical and mental standpoint. A similar marriage consultation center has been created in Dresden at the Technische Hochschule (polytechnic).

The *Allgemeine Ortskrankenkasse* (local health insurance society) of Dresden has decided to provide its members, without extra charge, with the privilege of securing advice on marriage relations at the marriage consultation center of the Hygienic Institute of the Technische Hochschule, Dresden, which is under the direction of Dr. P. Kuhn. This decision affords the tens of thousands of members of the local health insurance society the opportunity of getting free advice on marriage problems.

The Condition of Health of School Children in Prussia in the Second Half-Year, 1923

On the basis of an inquiry instituted by the Prussian Ministry for Public Welfare, the ministerial counselor of this ministry, Dr. Koenig, publishes findings which throw light on the effects on Prussian school children of the food scarcity and high prices of foods in the second half of 1923.

Of 38,033 school children concerning whom reports of school physicians are available, only 32 per cent were well nourished, 45 per cent were inadequately nourished, and 23 per cent were poorly nourished. According to reports from twenty-three Prussian government districts, which comprise a population of about 20,000,000 inhabitants, of 1,051,062 school children examined, 34,358, or 3.27 per cent, were tuberculous. According to the reports of the English committee of inquiry, during the last quarter of 1923, sixty-seven children out of a thousand died from tuberculosis in London, 117 in Munich, 124 in Berlin and 148 in Mainz.

Furthermore, undernutrition, combined with the dearth of shirts and the means of keeping clean, has brought about a considerable increase of cutaneous diseases, especially, scabies, skin eruptions and furunculosis, as well as pediculosis, in school children.

Marriages

HERBERT FOSTER GAINES, Birmingham, Ala., to Miss Sharon Scott McKillop of Mulberry, Fla., at Lakeland, Fla., July 5.

FRANK A. PADEN, Hartington, Neb., to Miss Elizabeth Oberlander of Coleridge, Neb., at Yankton, S. D., recently.

LOUIS GINSBURG, Johnstown, Pa., to Miss Esther Kremer of Perth Amboy, N. Y., at New York, early in July.

DONALD C. CONZETT, Chicago, to Miss Helen Jane Castleman of Elmhurst, Ill., at Chicago, June 10.

BLAIR POINTS, Luther, Okla., to Miss Violet White of Vandalia, Ill., at Luther, Okla., April 20.

ESTER M. SUNDELOF, Boston, to Rev. Eric G. Ericson of New York at New York, July 21.

ISAAC WALTER ALLEN to Miss Dorothy Kirk, both of Noah, Utah, at Salt Lake City, July 14.

JOSEPH J. RUVANE, Jersey City, N. J., to Miss Anna A. Sullivan of Brooklyn, July 25.

HUGH JACKSON MORGAN, New York, to Miss Robbie Porter of Asheville, N. C., July 22.

JOHN L. TAYLOR Waukegan, Ill., to Mrs. Crystal Eaton of Libertyville, Ill., June 14.

CLAUDIUS L. SIFERS, Denison, Iowa, to Miss Gladys Nelson of Kiron, Iowa, June 18.

WILLIAM H. NORTON, Troy, Mo., to Miss Flavian James, Springfield, Mo., July 8.

MAURICE P. CHARNOCK to Miss Agnes K. Sloan, both of Philadelphia, July 12.

GEORGE J. MAUTZ to Bessie L. Grant, both of Springfield, Ill., July 11.

WILLIAM A. MICHAEL to Miss Garnet Groff, both of Peoria, Ill., June 7.

Deaths

Edmond Souchon • New Orleans, Medical Department University of Louisiana, 1867, died at his home, August 5, aged 82. Dr. Souchon was visiting surgeon to the Charity Hospital, 1867-1906, and member of the board of administrators 1880-1882, demonstrator of anatomy (1874-1876) and professor of anatomy and clinical surgery Medical Department, Tulane University of Louisiana, 1885-1907. He designed and superintended the erection of the buildings at Tulane University School of Medicine and founded the Souchon Museum of Anatomy. He was president of the state board of health, 1898-1906, a fellow of the American Surgical Association, member of the Association of American Anatomists, the author of many articles on surgery, and emeritus professor of anatomy and clinical surgery at Tulane. Dr. Souchon was retired on a Carnegie pension, 1907.

Dudley Allen Sargent, Cambridge, Mass., Medical Institution of Yale College, New Haven, Conn., 1878, director of the Hemenway Gymnasium 1879-1919, and assistant professor of physical training at Harvard University, Cambridge, Mass., 1879-1889, director of the Normal School of Physical Training, Cambridge, Mass., 1881-1916, president of the Sargent School for Physical Education and of the Sargent Camp, Peterboro, N. H., inventor of modern gymnasium apparatus, author of Universal Test for Strength, Speed and Endurance, and many other works on physical education, member of the American Academy of Medicine, died at Peterboro, N. H., aged 74, of heart disease.

Robert Grier LeConte • Philadelphia, Department of Medicine, University of Pennsylvania, Philadelphia, 1888, fellow and former president of the American Surgical Association, and fellow of the American Association of Clinical Surgeons, on the staff of the Pennsylvania Children's, Bryn Mawr, and Germantown hospitals, member of the Philadelphia Academy of Surgery, the Philadelphia Pediatric Society, the National Tuberculosis Association, served in the World War, aged 59, was found dead in his office of a bullet wound, presumably self-inflicted, August 6.

John Franklin Critchlow • Salt Lake City, Department of Medicine University of Pennsylvania, Philadelphia 1894, formerly president of the Utah State Medical Association, for twenty-five years on the staff of St. Marks Hospital, division surgeon for the Western Pacific Railroad, died as the result of an automobile accident, July 24, aged 56.

Philip Chellis Bartlett • Newton, Mass., Tufts College Medical School Boston, 1900, formerly on the staff of the Massachusetts General Hospital, superintendent of the State Sanatorium at Glencliff, and head of the Framingham health center, member of the National Tuberculosis Association, died suddenly at his home July 25, aged 49.

Duncan Lee Despard • Philadelphia, Jefferson Medical College of Philadelphia, 1901, on the staff of the Episcopal Hospital, assistant professor of surgery at his alma mater, member of the Philadelphia Academy of Surgery, died in the Polyclinic Hospital, August 5, aged 55 as the result of a bullet wound inflicted by a former patient.

Grace Harriet Campbell • Chicago, Woman's Medical School of Northwestern University, Chicago, 1899, on the staff of the Mary Thompson Hospital, formerly an associate in pediatrics at Rush Medical College, and president of the Medical Woman's Club, died suddenly at her summer home, Fennville, Mich., August 1, aged 46.

T. Henry Davis, Richmond, Ind., Homeopathic Medical College of Missouri, St. Louis, 1869, formerly president of the Indiana State Board of Health, president of the medical staff of the Reid Memorial Hospital, and health officer of the city of Richmond, member of the Indiana State Medical Association, died recently, aged 88.

Caleb Jones, St. Paris, Ohio, Cincinnati College of Medicine and Surgery, Cincinnati 1876, formerly head of the Niles Sanitarium, Urbana, Ohio, also a druggist, president of the Farmers and Merchants Telephone Company, St. Paris, died, July 26, of heart disease, aged 73.

Joseph R. Broome • New York Medical College of Ohio, Cincinnati, 1888, formerly a practitioner in Utica, for many years editor of the medical department of D. Appleton and Company New York, since 1923 a publisher of medical books, died, July 12, aged 57.

Samuel Arnold Minnich, Greenville, Ohio, Long Island College Hospital, Brooklyn, 1882, formerly a practitioner in Brookville, for forty years a teacher in the Dayton public

schools, died suddenly at Dayton, July 20, aged 76, of apoplexy.

James Francis Chapman, Mount Kisco, N. Y., Medical Department of Columbia College, New York, 1869, formerly examiner for the Equitable Life Insurance Company, died, July 14, aged 80, following a long illness.

Holland C. Weaver, Rule, Texas, Chattanooga Medical College, Chattanooga, Tenn., 1900, member of the State Medical Association of Texas, died, July 7, aged 46, of septicemia following an abrasion.

Julius Franz Kowsky • Chicago, Dearborn Medical College, Chicago, 1906, on the staff of the Robert Burns Hospital, died suddenly, August 1, aged 46, of heart disease while enroute to Honolulu.

Norton W. Jipson • Chicago, Chicago Medical College, Chicago, 1889, on the staff of the Lakeside Hospital, member of the Chicago Historical Society, died suddenly at his home, August 5, aged 58.

Thomas H. Mulvey, Louisville, Ky., Kentucky School of Medicine of Louisville, Louisville, Ky., 1903, died, July 27, following an operation at the SS. Mary and Elizabeth Hospital, aged 46.

Carter William Ward, Leonora, Kan., University of Kansas School of Medicine, Rosedale, Kan., 1910, member of the Kansas State Medical Society, died suddenly in his office, June 4, aged 39.

George N. Snyder, Springfield, Ohio, Charity Hospital Medical College Cleveland, 1868, for many years a practitioner in Lagrange, Ohio, died, July 24, aged 79, of cerebral hemorrhage.

Samuel L. West • St. Clairsville, Ohio, Medical College of Ohio, 1883, president of the board of education and of the Belmont County Board of Health, died, July 29, aged 64, of apoplexy.

Adelbert A. Getman, Chaumont, N. Y., Albany Medical College, Albany, 1871, member of the Medical Society of the State of New York, died, July 25, aged 73, of diabetes mellitus.

Richard Henry Stuart, Jr., Colonial Beach, Va., University of Virginia Department of Medicine, Charlottesville 1907, died at a hospital in Staunton, July 19, aged 40.

George Napoleon Beal, Millinocket, Me., Bowdoin Medical School Portland Me., 1919, member of the Maine Medical Association, died July 15, aged 33, of typhoid fever.

James W. Robbins • Naugatuck, Conn., Bellevue Hospital Medical College, New York, 1880, died, July 20, aged 66, following a long illness.

Alonzo Ward Hill, Freewater, Ore., University of Michigan Medical School Ann Arbor, Mich., 1876, also a druggist, died, June 26, aged 73.

James Samson, St. Petersburg, Fla., Victoria University Medical Department, Toronto, Ont., Canada, 1868, aged 81, died July 16.

William H. Fraser, Bradford, Ark., Memphis (Tenn.) Hospital Medical College, 1904, aged 46, died, July 21, at a local hospital.

F. W. Storey, Arp, Texas, Emory University School of Medicine, Atlanta, Ga., 1889, aged 58, was found dead in bed July 21.

Henry A. Haley, Champaign Ill., Chicago Homeopathic Medical College, Chicago, 1882, died, July 19, of senility, aged 94.

Eugene Elmer Williams, Moodus, Conn. (licensed, Connecticut 1893), aged 61, died, July 23, following a long illness.

Charles W. Hunt, Brevard, N. C., College of Physicians and Surgeons, Baltimore, 1880, died, July 20, aged 65.

Francis Marion Halbert, Gulfport, Miss., Jefferson Medical College of Philadelphia, 1880, died, July 21, aged 68.

John A. Vincent Sweeney • New York, Long Island College Hospital Brooklyn, 1882, aged 67, died, July 22.

Henry A. Furniss, Galena, Ohio, Columbus Medical College, Columbus, Ohio, 1876, died, July 18, aged 69.

Charles Wesley Taggart, Winthrop, Me., Medical School of Maine, Portland, 1873, aged 75, died, July 20.

Maria Edmond Hincks, New Orleans, Pulte Medical College, Cincinnati, 1882, aged 73, died, July 20.

Henry Berton Hardman, Joplin, Mo., Lincoln (Neb.) Medical College, 1898, aged 48, died, July 13.

John B. Grigsby, Nough, Tenn. (licensed, Tennessee, 1889), aged 75, was shot and killed, July 14.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNALS
BUREAU OF INVESTIGATION OF THE COUNCIL ON PHARMACY AND
CHEMISTRY AND OF THE ASSOCIATION LABORATORY TOGETHER
WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

YADIL

An International Fake of British Origin

"Yadil" is Tono Bungay's 1924 model with one Alex Clement as Edward Ponderevo. To paraphrase H. G. Wells "Astraddle on Yadil he flashed athwart the empty heavens like a stupendous rocket." To the student of charlatanism it might be interesting to trace the commercial trajectory of Yadil's inventor from obscurity to obscurity. At present the Yadil rocket is a vivid piece of nostrum pyrotechnics—but the stick will come down.

Yadil (pronounced "Yah-dil," according to the makers) is not advertised in the crude style of 'Beecham's Pills' or "Kruschen Salts." Rather does the advertising campaign remind one of "Sanatogen" in those palmy days when the public could be persuaded to pay a dollar for a few cents' worth of casein. As "Sanatogen" was the apotheosis of cottage cheese, so Yadil is supposed to be a glorified and esoteric form of garlic. We say "supposed to be" because, as it will be learned later, there is practically no garlic in the stuff. Part of the Yadil advertising campaign is an alleged history of garlic as a curative agent covering the not inconsiderable period of from 3500 B. C. to A. D. 1924. Just what the theory of its use may be is not clear. Possibly the basic idea is that no self-respecting germ will want to tarry in an organism saturated with garlic.

Yadil is put on the market by Clement and Johnson, Ltd., of London whose board of directors are said to be

Joseph G. A. Clement	Pierce A. Arnold
Charles S. Baring Gould	Joseph Marcel Clement
Wallace J. Bartholomew	Jack Giffard
Raymond T. Matthews	

The concern has a subsidiary company for its publicity features known now as the "Yadil Press Ltd.," but formerly called 'Quality Press, Ltd.' The directors of Yadil Press, Ltd., are given as

Alex Clement (also chairman and managing director of Clement and Johnson Ltd. and the chief publicity man)
Sir Douglas Egremont Robert Brownrigg Bart. C.B.
Major General Sir George Townshend Forester Walker, K.C.B.
Major Robert Chaloner Critchley Long D.L. J.P.
Lieutenant Colonel Jack Giffard (also assistant managing director of Clement and Johnson Ltd.)

The American agents are E. Fougere & Co., Inc., of New York and Yadil is advertised in the United States only in a small way. In the British Isles however newspapers and especially magazines that appeal to the intelligentsia, are carrying full page and double page spreads of Yadil—for tuberculosis, for cancer, for scarlet fever, for gonorrhea, for what-have-you. Thus *The Nation* and *The Athenaeum* for June 7 carries a full page advertisement on "Yadil and Cancer." In this advertisement, Alex Clement the alleged discoverer, although careful not to make the flat-footed statement that Yadil will cure cancer carries the thought by every method of implication. *The Weekly Westminster* for May 17 in a two page advertisement on 'Yadil and Cancer' details an alleged case of inoperable cancer of the stomach which, under the Yadil treatment, was said to have disappeared.

More than a year ago the *New Leader* carried a full page advertisement for Yadil in which Alex Clement claimed that the problem of tuberculosis was solved. In this same advertisement Clement also declared that bronchitis, pneumonia, inflammation of the bladder, malaria, scarlet fever, typhus, diphtheria, pernicious anemia, meningitis and several other conditions are merely symptoms of one common disorder—internal infection. Then

Yadil destroys the internal infection and the symptoms disappear. That's all. This law is sound. It simplifies the practice of medicine. It safeguards patients against the dangers of wrong diagnosis.

Clement's theory is not original with him. It has been made by other quacks. Its very simplicity makes it plausible to a public that has not a groundwork of even elementary pathology.

A rather pretentious piece of advertising is the volume called "The Yadil Book." It is not free but sells for half-a-crown (about 60 cents). The average 'patent medicine' exploiter feels well repaid if he can get the public to swallow a lie furnished gratis. In the Yadil book Clement develops the thesis that under our present economic system it is to the interest of the medical profession that there should be plenty of sickness. As he puts it: "Where doctors are compelled to live by disease, they cannot afford to explain how to live disease free."

In addition to the Yadil book another elaborate piece of advertising has been put out by the Yadil concern through its subsidiary 'Quality Press, Ltd.," now called "Yadil Press, Ltd." This purports to be a scientific report and is entitled "Manchester Test of the Yadil Treatment of Tuberculosis in 100 Cases." The thing is printed so as to resemble in 'make-up' the reports of select committees appointed by Parliament and printed under the authority of the government. It is of the same general size and has the characteristic blue paper cover with which such reports are bound. This 'report' is being circulated not only in the British Isles but also in the United States.

The London correspondent of *THE JOURNAL* has already called attention to the Yadil advertising campaign in the British Isles and has pointed out that Alex Clement, the exploiter, has made frequent attempts to work the British medical profession in the manner typical of the nostrum vendor but that our British confreres failed to rise to the bait.

There is no better way of giving an idea of the scientific status of Yadil than that of quoting some of the claims made for it.

The medical evidence received during the last seven years proves conclusively that Yadil destroys the tubercle germs—and other disease germs—within the body, without the slightest risk of injury to cell tissue.

All cases of consumption not complicated by pent up fluid in lung cavities are curable at home with a relatively small quantity of the antiseptic.

I propose to make known to every victim of consumption in the British Isles that Yadil will cure them.

Yadil Antiseptic destroys all disease germs including the tubercle germs, the malaria germs, the smallpox germs, in the body without causing the least injury to internal organs—just as carbolic acid destroys all forms of disease germs in drains and dust bins [garbage cans].

Stomach cancer upon which a surgeon at Tottenham Hospital said it was useless to operate disappeared under the Yadil treatment for cancer.

Yadil treatment for cancer is simple, inexpensive, safe and based upon common sense.

"DIPHTHERIA—Mix one tablespoonful of Yadil with three tablespoonfuls of honey or syrup.

The sale of the product depends wholly on advertising. It contains no seductive or habit-forming drug to produce a "repeater" effect. Yadil is bought because the public is hypnotized with the lies told about the product. Publicity, therefore, is the lifeblood of the business. As has already been mentioned many British newspapers and magazines have willingly shared the profits of quackery by selling their space to advertise Yadil. There is at least one British newspaper, however, that has refused advertisements of this nostrum—the *Daily Mail*, a paper that is said to have the largest circulation of any newspaper in the British Isles. But the *Daily Mail* has gone further than merely negative virtue. In its issue of July 22 it publishes an exposure of Yadil written by no less an authority than the senior professor of chemistry in the University of Cambridge, Sir William J. Pope, F.R.S., M.A., D.Sc., LL.D. Prof. Pope handles Yadil without gloves and calls a spade a spade. The manufacturers claim that Yadil has the chemical designation "Trimethenal Allylic Carbide" and declare that it is entirely of harmless vegetable origin, its active principle being natural essential oil of garlic. Prof. Pope after analyzing Yadil states unequivocally that

1. Yadil Antiseptic is not trimethenal allylic carbide.

2. Yadil Antiseptic consists of about 1 per cent formaldehyde, 4 per cent of glycerine, 95 per cent of water and a smell.

The smell, says Sir William Pope, can be closely imitated by adding to one hundred tons of water one ounce of oil of garlic. He states, too, that while the nostrum is sold at the rate of about \$20 a gallon, a mixture similar to Yadil and made with distilled water could be prepared for 36 cents a gallon. After showing that "Trimethenyl Allylic Carbide" does not exist and that the term itself is an absurdity and after demonstrating that Yadil is essentially a one per cent solution of formaldehyde, Sir William Pope discusses the testimonials, both from physicians and from laymen, and shows the utter worthlessness of the testimony. He closes his article with the statement:

"It should be made impossible for a secret remedy to be sold as a certain cure for consumption and cancer, especially when that remedy contains such a poisonous substance as formaldehyde and is recommended for consumption by babies and invalids generally."

The *Daily Mail* followed up its first article with a second one from Prof W. E. Dixon, MA, MD, FRS, who is Reader in Pharmacology in the University of Cambridge. Dr Dixon reviews Sir William Pope's exposure and discusses the medical point of view of the matter. He emphasizes that the basic drug in Yadil is an irritant poison with a cumulative effect. He declares that the "Manchester Test" report put forth by the Yadil concern "is, from the medical standpoint, nonsense" in that no evidence is offered that any of the patients benefited by the treatment. He concludes by expressing appreciation of the work of the *Daily Mail* in exposing "a cruel fraud on anxious people who have little money to waste."

It now remains to be seen whether the present efforts made by the exploiters of Yadil to foist this wretched nostrum on the American public will be a success. If the concern is willing to spend as much money on printers' ink in the United States as it has spent in the United Kingdom Yadil will doubtless be swallowed, literally and figuratively, as avidly here as across the water. But the advertising appeal will have to be different. Any attempt to feature Yadil as a cure for consumption or as a cure for cancer would bar this nostrum from even the less squeamish newspapers of the United States. For instance, the advertisement, "Yadil and Cancer," that appeared in the leading organ of the British intellectuals, *The Nation and The Athenaeum*, a few weeks ago would never have been accepted in the United States even by the *Police Gazette*.

The exposure of Yadil appeared in the *Daily Mail*, July 22 and 23. A few days later the proprietors of the nostrum began action for libel against the newspaper, Sir William Pope and Prof Dixon. They did more than this. On July 29 the Yadil concern applied to the courts for an interim injunction to restrain the *Daily Mail* from publishing further exposures on the "patent medicine." The application is being opposed by the *Daily Mail* on the ground that it will fully justify itself for the statements published against Yadil.

The libel dodge is an old one. A few years ago scarcely a month passed that some "patent medicine" faker did not start an action for libel against *THE JOURNAL* or threaten to do so. In practically every case only the *præcipe* was filed and the matter was never heard of again, but it served its purpose. In every newspaper carrying advertisements of the "patent medicine" in question "news items" appeared giving the impression to the public that the American Medical Association had been mulcted in damages. Yadil will, doubtless, try the same dodge and, presumably, the newspapers that are deriving handsome revenues from this source of quackery will do their best to let the British public believe that Yadil has been wickedly libeled. "Whose bread I eat, his song I sing."

Seat of Higher Mental Functions—The association areas of the human brain are the fields for all the higher mental functions—such as thought, memory, reason and speech. The capabilities of the human individual in these directions will differ according to the number and mode of connection of fully developed functioning neurons within these areas.—J. A. Berry *Brit M J* 1 710 (April 19) 1924

Correspondence

"CURRENT CRITICISMS OF MEDICAL EDUCATION"

To the Editor—Dr Pusey's point in his comment (*THE JOURNAL*, August 9) on the editorial "Current Criticisms of Medical Education" is well made. In your editorial you take no account whatever of the specific recommendations in the way of medical education and supply of physicians for places in need of them which Dr Pusey made in his notable address as President-Elect of the Association. These suggestions were definite and specific, and evidently made as the result of much thought. Personally I subscribe to them as being most promising in the way of amending our present difficulties and indeed our dangers.

If Dr Pusey is wrong, this ought to be shown. Surely the suggestions of the President of the American Medical Association when definite, specific and somewhat radical ought to be supported and tried out, or they ought to be rejected. It is not fair to Dr Pusey nor to the Association nor to those who, like the writer, are deeply interested in the subject, to pass over it by such general comments as you make in the editorial to which I have referred. Let us hear from the Council on Medical Education. The subject is a live one—not a threshed out one.

THEODORE DILLER, M.D., Pittsburgh

THE PREVALENCE OF "EVALUATE"!

To the Editor—Is there an especially comprehensive, or technical, or medical, meaning to the word "evaluate" which causes it to appear in so many recent medical papers? Or does it like the economic coinage "normalcy," just appeal to many?

DAVIS FURMAN, M.D., Greenville, S. C.

[NOTE—Probably the latter. It has long been known to philologists that there is a tendency for words to be taken up and widely used over short periods, and then discarded for more popular words. In other words, there is a style in words as in other phases of human existence.—ED.]

FACTS REGARDING ALLEGED OPERATION ON SIAMESE TWINS

To the Editor—July 18 and 19, newspapers contained accounts of the birth of Siamese twins at the Borough Park Maternity Hospital, also varying accounts as to the physicians' skill in saving the life of one of the twins.

July 10, at 6 p. m., I was called to attend the patient, after the membranes had ruptured. Abdominal examination revealed a twin pregnancy with breech presentations. The right fetal heart was heard above the umbilicus, the rate being 150 a minute, and the left fetal heart above the umbilicus the rate being 90 and the quality of sound poor. No active labor pains occurred until July 11 at 7:30 p. m., when the patient was removed to the hospital. Vaginal examination on entrance to the hospital showed the cervix fully dilated, and buttocks and foot presenting. The breech was delivered to the shoulders, and the head was extracted according to the Smellie-Veit method, with pressure over the pubic region. This breech presentation was a living male baby, weighing about 5½ pounds. Examination of the baby after the umbilical cord was ligated and cut showed a ventral hernia about 3 inches in diameter, and a malformation of the penis—just a tab of erectile tissue with two urethral openings at the top. The scrotum and testes were well formed. This living baby was born at 1:30 a. m., July 12. Twenty minutes later, about 1:50 a. m., the placenta presented itself at the

ulvovaginal orifice, but the patient had slight uterine pains and could not expel it entirely. It finally was crowded out of the vaginal orifice by the Schultze method at 2 a. m., and the Crede procedure was not necessary.

There now presented at the side of the placenta two fetal hands and the intestine of the monster fetus. After the placenta was removed, I extracted the monster fetus in the breech manner.

Examination of the placenta showed two umbilical cords, one long cord measuring from 12 to 14 inches, from which the living fetus was receiving its nourishment, and a marginal short cord of from 4 to 6 inches, which was attached to the monster fetus.

In the monster fetus, the head, upper extremity and chest were deformed. The abdominal viscera were covered by a thin layer of peritoneum. The left lower extremity was absent and the right lower extremity seemed to extend from the end of the spine, pointing toward the head.

Contrary to statements in the press in the delivery of the first breech I experienced no difficulty and did not need assistance or resort to any surgical procedure, as the normal mechanism of breech delivery was sufficient. The dead fetus was attached to the placenta through a short umbilical cord, and in no way attached to the living baby. No surgical operation was performed by me or by Dr. Mininberg to separate the babies, as they were not attached and not born so.

This was not a "Siamese twin birth."

MORRIS GOLDBERG, M.D., Brooklyn

AMERICAN PHYSICIANS WITH BRITISH TROOPS

To the Editor—For the past year I have been gathering data for a comprehensive survey of the services of American medical officers who were assigned to the British during the war. Through various sources, the information gathered has been gratifying but many men now in practice have subject matter which should be in this book. I hesitate to continue until all means of collecting authentic information have been exhausted. It would be decidedly unfair to omit any possible contributions. I take this means of bringing to the attention of those men who were with the British in the field my interest in their experiences or those of men they knew. Contributions should consist of a narrative, with names of places, men, outfits and dates. These articles will blend one with the other and make an interesting history of those 1,400 men who served under a foreign flag. No man can do this work alone, and no one man can tell the story for all.

W. A. R. CHAPIN, M.D.,
121 Chestnut Street,
Springfield, Mass.

"THE ENDOSTEUM"

To the Editor—In my letter on this subject (*THE JOURNAL*, July 26, p. 289), that portion of it which asked for some concrete evidence of the existence of any such structure as an endosteum was elided, though it was the nubbin of the whole matter. Leaving this out, you publish Dr. Haas' erudite answer giving various opinions and theories of different authorities, with a learned disquisition on the subject of bone formation in general. This whole matter illustrates well the great difficulty of establishing the treatment of diseases of bones and joints on a rational basis. We have little else but theories and opinions to guide us. Some eminent authority expresses an opinion. It is accepted as a fact and perhaps an elaborate treatment is based on it. When we seek for a foundation of the treatment, we find that there is none.

Perhaps, instead of asking for information, I also should have stated a fact in my former communication. As the result of much laboratory work for many years, I have come to the conclusion that there is no such structure as an endosteum. Like the cambium layer of the periosteum, it has no existence except in the imagination of those who like to think it is there. I deny its existence, and challenge the production of proof on the other side. Gray does not mention it, except in connection with the dura mater. If one looks at slides of bone under the microscope, one sees many osteoblasts or bone cells in and on the trabeculae, and in, and on the outside and inside of the cortex, but no definite structure in the form of an endosteum can be detected. Endosteum is simply marrow.

LEONARD W. ELY, M.D., San Francisco

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted, on request.

LERCH'S DROP PERCUSSION METHOD

To the Editor—In his article on the size of the normal heart (*THE JOURNAL*, June 21, p. 2016) Fossier states that he employs Lerch's drop percussion method but does not sufficiently describe the technique of the method. As I am unable to readily secure the articles referred to in the bibliography I would appreciate certain information concerning details of Lerch's drop method. The author states that "the sounds are heard the resistance is felt and the vibration of the hammer may be seen." He further says "A hammer and pleximeter are necessary to obtain good results." 1. If both plexor and pleximeter are used how is it possible to feel the resistance? 2. What type and size plexor is recommended best to bring out the vibrations? 3. What are the size and type of pleximeter used? 4. Has this method been used to advantage by individuals in the determination of pulmonary infiltrations?

ROBERT L. DANIEL, M.D., Waynesville, N. C.

ANSWER—The questions propounded are best answered by the following quotation taken from the article by Otto Lerch "My Method of Percussion" (*International Clinics* 4, Series 25).

Hammer and pleximeter are used but instead of the stroke a drop. The principle of this method is different from all others now in use and its employment excludes every personal factor. A drop is a drop in every hand and the result must be the same if the hammer is allowed to drop from the same height. The difference of opinion as to the quality of the percussion stroke whether light or strong which depends on the judgment of the examiner is entirely eliminated and the method yields a uniformity of result which can not be obtained with any other.

The sound produced by the drop passive is therefore far more delicate and defined than the one produced by a stroke. The method unites palpation also passive with percussion. The most minute changes of vibration are felt in the fingers that hold the pleximeter and the hammer feels heavy when the border of the solid organ is reached light when an organ filled with air is percussed. Finally the eye controls the impressions received by ear and touch. The rebound of the falling hammer changes with the change of vibrations it depends on the elasticity of the medium percussed. The hammer rests like dead upon the surface when absolute heart dullness or liver dullness is percussed and rebounds frequently when the relative dullness of these organs is determined.

The hammer consists of a steel head with black rubber tip and a light wooden or hard rubber handle. The rubber tip must not be too hard and not too soft. A medium hardness gives the best results. Its elasticity has to be tested. A thin small ivory or celluloid plate with vertical edges to hold it with forefinger and thumb serves best as a pleximeter.

The method is suggested especially in the determination of pulmonary infiltrations, and in the percussion of abdominal organs.

'ETHYL GAS—TETRAETHYL LEAD

To the Editor—Ethyl Gas Fluid is used in gasoline to increase the "pep" of the motor. The places in which this fluid is sold exhibit a sign calling attention to the corrosive action on skin and suggest soap and water to be used immediately. Is there any chemical antidote? This fluid is sold by the Standard Company.

A. C. BENEDICT, M.D., South Orange, N. J.

ANSWER—"Ethyl Gas Fluid" is gasoline to which has been added a small quantity of liquid containing as its chief constituent tetra-ethyl lead and also an organic chlorine compound so that the lead in the exhaust may be converted to lead chloride, the gasoline usually contains a dye in addition.

to serve as a warning that the gasoline contains this compound. The amount of tetra-ethyl lead is small, but has a decided influence on the rate of combustion in compression engines. It is the result of much experimental work by the General Motors Company, it is dispensed for the General Motors Company by various refining companies. As lead is considered a cumulative poison, inquiry was made from the General Motors Company concerning the possible toxic dangers from the use of this product along congested traffic lanes. In reply the General Motors Company wrote "Although no data have been published, a comprehensive research on the possible danger to the general public from lead poisoning has been carried on by the Bureau of Mines in cooperation with the Department of Public Health. A preliminary report on this investigation will be available shortly. At present I may say that all indications are that there is no danger of acquiring lead poisoning through even prolonged exposure to the exhaust gases of cars using ethyl gas. Poisoning from carbon monoxide would arise long before the concentration of lead would reach a point where even cumulative poisoning is to be feared."

Inquiry was also addressed to the Bureau of Mines. Dr. R. R. Sayers, the chief surgeon of the Bureau of Mines, stated that the bureau, for some months, had been carrying out "investigations on the possible health hazard due to the use of tetra-ethyl lead in gasoline. These tests are not completed and, until a study is completed, it is inadvisable to draw conclusions as they may be reversed at any time."

We do not feel that there is necessity for the use of a chemical antidote when the arm is immersed in gasoline containing tetra-ethyl lead for a brief period, it is our opinion that the use of soap, as recommended, is the most advisable procedure.

CONTRACTS IN RESTRAINT OF PRACTICE

To the Editor—If I employ an assistant and he in the presence of a witness signs an agreement not to practice medicine or surgery in this town for a period of five years after I am through with his services can I enforce this agreement by law? M D W Va

ANSWER—Contracts of this general character are enforceable through the courts. Limitations as to the area and time within which the assistant is to refrain from practice must be no greater than are reasonably necessary to protect the practice of the principal from unfair encroachment. A contract in which a physician agreed not to practice medicine in a certain village or vicinity for a term of at least five years was upheld in *Timmerman v Dever*, 52 Mich 34. No opinion can be expressed as to the enforceability of the particular contract of which our correspondent writes, in the absence of exact knowledge as to its terms and as to the conditions surrounding it. If the contract is in contemplation, by all means one should employ competent local counsel to draft it and to see to its proper execution. If the terms of an existing contract are in dispute, one should exhaust every effort to arrive at a mutual understanding, by arbitration or otherwise, before resorting to the courts.

TREATMENT OF BURNS

To the Editor—In an abstract of an article by Tomb on the treatment of burns with chlorinated lime (*THE JOURNAL* June 7 p 1895) a liniment is mentioned. Please give me the formula mentioned.

GEORGE B TUTTLE M D Waimea Kauai Hawaii

ANSWER—Tomb mixes equal parts of olive oil and a 10 per cent solution of chlorinated lime, on the day of use because the hypochlorites deteriorate. If this liniment should be too strong, the solution of chlorinated lime may be diluted with simple lime water before mixing with the oil.

SYPHILIS

To the Editor—1 Is it possible for a syphilitic male having no visible lesions other than a four plus Wassermann reaction to infect a female? 2 If so are the chances greater if the female becomes pregnant? 3 What percentage of children born of syphilitic fathers are syphilitic? 4 What percentage of children born of syphilitic mothers are syphilitic? 5 Is it possible for a nonsyphilitic mother to give birth to a syphilitic child? F T V MD

ANSWER—1 It is possible for a syphilitic with a positive Wassermann reaction and no visible lesions to produce infection. This will be due, however, from the transference of spirochetes from some active lesion. The likelihood of this

occurring becomes less and less as the disease becomes older. In old syphilitic patients this possibility practically vanishes.

2 No

3 and 4 There are no accurate statistics. It depends largely on the age of the syphilis in the father.

5 No There is some tendency at present to question this answer, but the reasons are very strongly in favor of the fact that a nonsyphilitic mother cannot have a syphilitic child.

BENZOSULPHINIDUM (SACCHARIN) ON OATMEAL

To the Editor—Will you kindly inform me whether saccharin can be used as a sweetening with breakfast cereals in a way to conceal its bitter taste? Two patients have attempted its use in place of sugar with oatmeal but complain of a bitter taste.

CHARLES BUSEY M D St Joe Idaho

ANSWER—Benzosulphinidum (saccharin) is about 500 times sweeter than sucrose. A dilution of 1 10,000 is agreeably sweet but in a concentration of 1 1,000, it becomes bitter and disagreeable. Even with the more dilute solutions, the quality of the taste is somewhat different from sugar, and on continued use, the persistent after-taste often becomes quite objectionable. As oatmeal is very high in carbohydrates (milk or cream is also generally added), it would not seem that this food would be indicated when benzosulphinidum is indicated, i e, in diabetes and obesity.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA Juneau Sept 2 Sec Dr Harry C DeVighe Juneau
MASSACHUSETTS Boston Sept 9 11 Sec Dr Charles E Prior
144 State House Boston
NEW HAMPSHIRE Concord Sept 11 12 Sec Dr Charles Duncan,
Concord
PORTO RICO San Juan Sept 2 Sec, Dr D Biascoechea San Juan

Minnesota April Examination

Dr Thomas S McDavitt, secretary, Minnesota Board of Medical Examiners, reports the oral, written and practical examination held at Minneapolis, April 1-3, 1924. The examination covered 15 subjects and included 80 questions. An average of 75 per cent was required to pass. Twelve candidates were examined and passed. Twenty-two candidates were licensed by reciprocity. Two candidates were licensed by endorsement of their credentials. The following colleges were represented:

College	PASSED	Year Grad	Per Cent
Rush Medical College		(1923)	90.9
Hospital College of Medicine Louisville		(1907)	77.1
University of Minnesota		(1922)*	86.8
	(1923) 86.9 (1923) 3 * 83.8 88.2 89.8	(1924)	90
McGill University Faculty of Medicine		(1921)	86.4
University of Manitoba Faculty of Medicine		(1921)	91.2
University of Edinburgh Scotland		(1911)	90.4
University of Basel Switzerland		(1921)†	85.3

College	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Loyola University		(1923)	Illinois
Northwestern University	(1900 2) (1920),	(1921)	Illinois
Rush Medical College	(1897) North Dakota	(1917)	Illinois
University of Illinois		(1923)	Illinois
State University of Iowa College of Medicine		(1921)	Iowa
University of Louisville	(1920)	(1921)	Kentucky
Tulane University		(1895)	N Dakota
Baltimore Medical College		(1910)	Washington
Harvard University		(1921)	Illinois
University of Michigan Medical School		(1920)	Michigan
Creighton Medical College		(1921)	Nebraska
University of Nebraska		(1921)	Nebraska
University of Pennsylvania		(1918)	Illinois
	(1921) Kansas	(1921)	Penna
University of Pittsburgh		(1922)	Penna

College	ENDORSEMENT OF CREDENTIALS	Year Grad	Endorsement with
Loyola University		(1923)	N B M Ex
University of Pennsylvania		(1918)	N B M Ex
* These candidates have completed their medical course and have received their M B degrees. They will receive their M D degrees on completion of a year's internship in a hospital.			
† Graduation not verified			

Social Medicine and Miscellany

A PLAN OF HOME HOSPITALS FOR SICK INFANTS*

HENRY DWIGHT CHAPIN, M.D.
NEW YORK

After many years' hospital experience with infants and little children—exhibiting varying degrees of success and failure—I have reached the conviction that certain types of illness in this class rarely thrive under ordinary hospital care. Many sick and ailing infants are much better treated out of the hospital than in it.

The very structure and operation of the average hospital, both special and general, include conditions unfavorable to infant life. This question is especially bound up with problems involved in the constant change by rotation of interns and nurses, as well as the ever present danger from all kinds of cross infections. Steady, uninterrupted individual care is essential to the satisfactory nursing of infants at all times, but especially when they are sick. A peculiar and particular aptitude is required for the successful nursing of delicate and sick infants. Many nurses, in spite of training, never acquire this ability. Patience, watchfulness and a loving touch may succeed where the most rigid discipline fails. If a nurse once acquires such facility, she should be kept on the job for the good of the baby. The hospital routine will occasionally produce an adept but it must be acknowledged that there are more of the other kind in the procession.

An important and necessary feature of a hospital's work consists in the training of young and inexperienced physicians and nurses but constant change is frequently at the baby's expense. The education of physicians and nurses is naturally what calls them to the hospital, and cannot be neglected if their services are to continue, but as soon as they become fairly proficient, they are moved on to the next service, and a new and raw levy takes their place. Again the 'afternoon off' may occur at the critical time for a very sick baby, and a probationer is put in charge. The most careful attention to every little detail of care and feeding may be necessary to success in such a case. There is nothing so unstable and uncertain as a fragile baby.

With reference to cross infections, while theoretically they should not occur, actually, very few hospitals can boast of their absence. The common and constant danger is from contact infection. It would require an asepsis worthy of the operating room to prevent this accident at this most susceptible period of life. Needless to say, this is rarely found in medical wards. The inauguration of small units in place of large wards will diminish the risk from the droplet infections of such diseases as measles and whooping cough, but even then it is very difficult to prevent their entrance and spread in children's hospitals. Admission during the invasion period much increases the risk. As these diseases are so frequently followed by tuberculosis in malnourished children, it becomes a serious feature of this problem.

There is also the constant danger from auto-infection as well as hetero-infection in babies' wards. Perhaps this is seen most often in bronchopneumonia. The frequent recurrence and insidious spread of this disease are more marked in the hospital care of pneumonia than when the disease is treated outside. This has been shown by the records of the Henry Street Settlement nurses of New York, who work entirely in homes. As soon as a baby shows signs of resolu-

tion in any type of pneumonia, it should be promptly discharged from the hospital. Many necropsies that I have made in infants dying in the hospital show a terminal bronchopneumonia or hypostatic pneumonia in most kinds of fatal illness. There is also constant danger of reinfection in nearly every variety of the acute and chronic infections that send a baby to the hospital.

As success in hospital care for sick infants is subject to so many disturbing factors, some years ago I tried another plan. This consisted in sending out cases that were not doing well to some of the boarding homes in one of my Speedwell units. Unresolved pneumonias, intractable bowel disturbances, and similar conditions, were treated in these homes under the eyes of the physician and nurse serving in the unit. As the results were not favorable, or no better than the hospital treatment, the practice was discontinued. The foster mothers also frequently became demoralized in the presence of very sick or dying babies.

It recently occurred to me however, that this plan might be worked out in a somewhat different form. This has consisted in carefully selecting a number of good homes with especially efficient foster mothers, who, under careful and special instruction, can adapt themselves to such a work, and thus form home hospitals. Extra care by physician and visiting nurse and extra pay for the foster mother are necessary corollaries of this effort. I believe there is a promising future for this plan in dealing with many cases of sickness in babies that would otherwise be consigned to the hospital. This would mean a very great restriction in the number of sick infants sent to a hospital. The hospital then need only be utilized for surgical operations, for a few severe illnesses requiring highly specialized nursing and treatment, or for scientific observation of obscure cases requiring much laboratory study. In most instances, a small ward can function efficiently and economically for cases requiring such special study or care.

Since working on this problem, I have been much interested in learning that in 1912, the Association for Improving the Condition of the Poor in New York started a home hospital plan in the treatment of tuberculosis. The work has been done in model tenement houses, where families are housed when one or more of the members have tuberculosis. It has been found that nearly one third of the children in dependent families in which one or both parents have active tuberculosis are themselves already patients, much more than another third are delicate and undernourished and present some of the symptoms of tuberculosis in children.

Mr. John C. Gebhart¹ of the association has recently made a ten-year study of the work of this form of home hospital. His report shows that, so far as medical results are concerned, the home hospital has made a record which is comparable to that of the best sanatoriums in the country. On the follow-up of patients, with respect to those who are alive and able to work for various periods subsequent to discharge, the results of home hospital care are found to be better than those secured by various sanatoriums. The record further tends to prove that proper supervision and care of tuberculous families in their own homes is in the long run the most humane and the most economical. If a depressing and communicable disease such as tuberculosis can be handled successfully on the home hospital plan, it is certainly worth while trying to apply it in the case of infants who are so susceptible to hospitalism. We have been obliged, however, to work in individual apartments not located in model tenements.

The principal factor in the success of our plan consists in securing an intelligent and willing foster mother who will

* Read before the American Pediatric Society, Pittsfield, Mass., June 6, 1924.

¹ Gebhart, J. C. Personal communication to the author, data to be published.

carry out orders, always remembering that a moderately trained mother will often do better with a sick baby than an overtrained nurse or nun. Careful watching and nursing by such a mother under the direct supervision of physician and trained nurse follow.

The work began during the last year by selecting two good homes in the Yonkers Speedwell unit. One of these homes is located on the first floor of a two family house with good light and air and a spacious back yard. The foster mother is an intelligent married woman with one child. The other home is a small, two story detached house with a little yard and garden that insure satisfactory light and air. The family consisting of husband, wife and several older children, occupy the entire house. Twelve acutely sick babies have been satisfactorily treated in these homes instead of being sent to a hospital. Special history blanks and records are utilized by physician and nurse in this work. The cases were two of bronchopneumonia, three of acute gastro enteritis, two of fermentative diarrhea and vomiting, and five of atrophy with chronic indigestion, requiring special formulas and feeding care. All the patients eventually recovered. A brief glance at two cases will show the type.

CASE 1—F F, aged 5 months, had bronchopneumonia lasting over two weeks, with a temperature varying from 101 to 104 F, complicated by enteritis and difficulty in feeding. Eventually the infant made a good recovery and even regained the weight lost in the illness.

CASE 2—E R, aged 2 months, affected with atrophy, with vomiting and diarrhea. At first the child was unable to retain any food, but a special lactic acid formula was tolerated and later, modified milk was given. This was followed by gradual recovery.

Cases like these rarely do well in hospitals.

It has been more difficult to establish the home hospital in the congested tenements of New York but still, a successful start has been made. Light, air and cleanliness are not so readily obtained. A trial was made of ten homes before Dr Dowd, who has charge of the Spence Speedwell unit was satisfied that two could be retained. Six very sick babies have been thus treated, with one death. The latter occurred in an atrophic baby of 8 months with general glandular enlargement and showing the status lymphaticus type. It had one infection after another, acute nasopharyngitis, double otitis media, bronchitis, measles, and finally gastro-enteritis. The measles was contracted in the boarding home from one of the children in the family. It has since seemed best to place sick babies in homes where there are no young children, so that the chances of hetero-infection may be lessened, and the foster mother may not be otherwise distracted. In a serious illness like pneumonia, the nursing must be done by a specially trained foster mother who has only that one case to look after, and in a very clean home. The five other cases mentioned above made a good recovery, three of bronchitis, two of whom had double otitis media, one of bronchopneumonia, and one of eclampsia. These cases all required very active service on the part of the physician, the visiting nurse and the foster mother. Two lumbar punctures were done and drums incised in the cases of otitis. Gavage feeding, bowel irrigations, temperature records sponging for high temperatures, and other necessary procedures were successfully performed, as in the hospital. The patients were all rickety, malnourished babies that rarely last long under ordinary hospital care.

The exact form and operation that such a movement may eventually take must be a subject for future experiment. The scientific method of trial and error may be followed. I am convinced, however, that there are great possibilities in the general plan. One suggestion might be offered that hospitals handling sick infants select a number of promising homes in

their immediate vicinity where they could treat many of these cases, or quickly transfer them from the wards when convalescent. The machinery of the hospital could thus be utilized by sending physicians and nurses into the surrounding homes. This would also have a directly beneficial effect on the neighborhood. It could operate much as the modern university extension acts in diffusing the knowledge and culture of the college. Community health centers might also utilize their medical and nursing staffs in the home hospital care for certain kinds of patients. It would be easy to link up home hospital service with any organization that could supply physicians and nurses already trained along somewhat similar lines.

There is one other feature of this work that may be noted—the comparatively small expense in reference to the results obtained. In hospital operation, efficiency must never be sacrificed to economy, but steadily mounting costs cause grave concern. Many self-respecting persons of moderate means and with proper pride, cannot secure needed help for themselves or dependents from hospitals as they are now operated. The millionaire and the pauper are well looked after, but the large intermediate class has little offered that is within its means. A glance at the daily per capita cost of operation of some of the general and special hospitals in New York during the past year shows the following figures, according to the report of the United Hospital Fund. The daily per capita cost of eighteen general hospitals showed an average of \$5.15, ten hospitals for women and children averaged \$4.23, eleven special hospitals averaged 4.28, and some reached much higher figures. Even these amounts do not represent the real cost of the services rendered, as no estimation is included in these figures as to the capital tied up in the plant, the general depreciation of property, or the remitted taxes. If a sick baby is to have attention in a private or semiprivate room in one of these hospitals with any kind of individual nursing the cost is prohibitive to many. At half, or less than half, the cost a large proportion of illnesses in infants can be handled in the home hospital with equal or better chance of recovery.

The plan here advanced represents a more intensive effort along the lines carried out during the last twenty-three years in the Speedwell unit system of boarding out, and thus represents the natural evolution of an idea. As ordinary malnourished infants have done so well under this system, it has seemed that more special attention focused on a few promising homes should work well with acutely sick babies, and the plan can be operated anywhere and everywhere. The results are most promising at a minimum cost and without any outlay of capital. Human service is stressed aside from bricks and mortar.

51 West Fifty-First Street

REPORT OF INTERNATIONAL HEALTH BOARD

The International Health Board of the Rockefeller Foundation, in 1923, cooperated with government agencies in health work in sixty-eight states and countries. The report of the general director, Dr Frederick F Russell, shows that the board's activities included the development of rural health organizations, the world-wide campaign against hookworm disease, a campaign against yellow fever in Mexico, Brazil, Colombia and other countries of Central and South America, cooperation in the health program of the League of Nations, the organization of facilities for training public health nurses in France, Brazil and the Philippines, the training of other public health personnel through schools of hygiene and fellowships, the development of public health laboratories, and field studies in malaria control in the United States and various tropical regions. Dr Russell says that the International Health Board does not feel that any demonstration has been successful unless its assistance ceases to be needed.

within a reasonable time, and that any project which is not absorbed into the official health service is obviously unsuited to the time or place. The report states that there were 230 counties in twenty-eight states of the United States that had full-time health organizations, and that in Ohio 48 per cent of the counties had full-time organizations, Alabama, 32 per cent, North Carolina, 31 per cent, New Mexico, 27 per cent, South Carolina, 21 per cent, and Georgia, 11 per cent. Only two years have elapsed in Brazil since the first full-time health unit started, but county health units are being established in several states. The government has cooperated with sixteen of the twenty states, and 225 projects are under way.

When several hundred cases of yellow fever were reported at Bucaramanga, Colombia the board sent experts, on invitation from the Colombian government, to confirm the diagnosis and to institute control measures. New cases of yellow fever rapidly ceased to appear, and none have been reported since May 1923. There was a serious epidemic in Ceara, Brazil, from 1921 to 1923, and the disease has been endemic in Bahia, where a total of 157 cases was reported, with thirty-nine deaths. The experience of 1923 shows, it is said, that the opening of branch state laboratories results in a rapid increase in the amount of work performed and the number of physicians served and that no other activity of the health department produces so quickly an improvement in medical practice as the diagnostic laboratory or brings to its support so many physicians. The board assisted in developing nine laboratories in seven states in 1923. A laboratory was opened in Honduras, Costa Rica is ready to establish one, in Nicaragua, a laboratory was conducted by a native staff throughout the year, and two branches have been opened, and in Salvador the work of the laboratory has been extended to include the examination of foods and drugs. Manila, Dr Russell says, has long had the distinction of having one of the earliest and best equipped diagnostic laboratories anywhere in the world.

The campaign against malaria in the southern part of the United States started in 1917 in and about the army camps, and after the armistice this work stopped. It had been a war measure carried on regardless of expense, and the hesitation of small communities to undertake to keep this work up was easily understood. The International Health Board was able to show that malaria control need not be expensive, but that an average community can virtually rid itself of malaria at a per capita cost of from 45 cents to \$1 a year, provided a careful preliminary survey is made to define the local problem. During the year the board's malaria control work was carried out on a county basis, and whenever possible the campaign was directed by the county health officer with the assistance of the state health officer. During 1923, seventeen new counties undertook antimalaria campaigns. The spleen index was shown to be a simple and reliable index of malaria. In Lee County, Georgia, a comparison of the spleen index, plasmodium index, and the malaria history index of 571 persons examined, showed that the spleen index furnished a more sensitive measure of malaria than the blood index. Among these people the spleen index was 408 per cent, the plasmodium index 25.2, and the malaria history index 37.4.

The board cooperated with governments in twenty countries in the control of hookworm and treatment was administered to 717,000 persons under the direction of the board's representatives. In Ceylon alone, 500,000 outpatients were treated for hookworm in 240 institutions. On the average, in all the twenty countries 80 per cent of the persons examined were found to be infected.

Influenza Epidemics in Europe—In Denmark there were nearly 25,000 cases of influenza in March as against about 10,000 in February, in Sweden about 2,300 in March as against 2,440 in February. The very marked epidemic in Switzerland is stated to have definitely ended, only seventy-five cases having been reported during the last week of April as against a weekly maximum of 5,563 at the end of February. In Spain 1,635 deaths were registered as due to influenza in February as against 853 in the same month of 1923.—*Pub. Health Rep.* 39 1572 (June 27) 1924.

Book Notices

TRAITÉ D'HÉMATOLOGIE CLINIQUE. Par J. Rieux. Médecin principal de 1re classe. Paper. Price 70 francs. Pp. 761 with 32 illustrations. Paris: Gaston Doin, 1923.

This comprehensive work is an enlargement of the author's "Precis d'hématologie" published in 1911, and aims to furnish the student of medicine with a knowledge of the methods of hematologic study and to point out to him the great importance of this field, which is so rapidly enlarging. To the clinician it offers an extensive guide in the diagnosis, prognosis and treatment of the many conditions associated with abnormalities of the blood. The book is divided into six parts, dealing with general hematologic technic, physiologic hematology, pathologic hematology, bacteriology and parasitology of the blood, and the principles and methods of blood transfusion. In the portion of the work devoted to technic, the usual routine measures for counting the cellular elements, for determining the hemoglobin, and for studying the fresh and stained specimens are given in fairly adequate detail, but the discussion of the chemical examination of the blood is far from satisfactory and hardly mentions the vast amount of work done by our American investigators in elaborating methods for such study. The portion dealing with the serologic reactions appears unnecessarily brief in a work of such dimensions. The remaining sections of the book are entirely adequate, the discussions being clear and embodying the generally accepted ideas as to cytology, diagnosis, prognosis and treatment. The colored plates are especially worthy of mention and should prove of great value to the student and practitioner. This work should be of interest to the clinician although we doubt that the student would obtain as much value from it as from other works giving a more detailed technical discussion.

A MANUAL OF URINE EXAMINATION. For Students of Pharmacy and Nursing. By Florin J. Amrhein. Ph.G. Ph.C. Assistant Professor of Chemistry at the Massachusetts College of Pharmacy. Cloth. Price \$2. Pp. 201 with 50 illustrations. Philadelphia: W. B. Saunders Company, 1924.

This is intended to cover the course as given at the Massachusetts College of Pharmacy and aims to present in a concise manner the more important chemical, microchemical and microscopic methods now in general use in the examination of the urine. No attempt is made to dwell on theoretical or diagnostic points in connection with such examinations, the author rightly pointing out that it is not the office of the analyst or the technician to make the diagnosis. The methods outlined are the generally accepted ones for this work, and the discussions are clear and concise. The book is divided into nineteen chapters dealing with the various phases of the examination of the urine. Of especial value to the student should be the chapter on condensed laboratory directions for chemical examination, as from this he may gain much information of a practical nature. The book can be recommended to all nonmedical workers who may wish to become familiar with urine examination, and also to the general medical student as a guide to the practical, routine study of the renal excretion.

PATHOLOGICAL TECHNIQUE. A Practical Manual for Workers in Pathological Histology and Bacteriology including Directions for the Performance of Autopsies and for Clinical Diagnosis by Laboratory Methods. By Frank Burr Mallory. A.M. M.D. Pathologist to the Boston City Hospital and James Homer Wright. A.M. M.D. S.D. Pathologist to the Massachusetts General Hospital. Eighth edition. Cloth. Price \$6.50. Pp. 666 with 180 illustrations. Philadelphia: W. B. Saunders Company, 1924.

The first part of this book is devoted to the technic for cutting, fixing, embedding and staining specimens. That portion on staining solutions gives many differential stains. The portion of the book on culture mediums and culture methods includes the hydrogen ion concentration method of adjusting mediums as well as the titration method and the culture and differentiation of pathogenic bacteria and fungi. The next chapter is on animal parasites. The chapter on blood includes besides the usual examinations, such special examinations as the percentage volume of the red corpuscles, the volume of the blood, the volume index, the resistance of

red corpuscles, and the technic for determining the incompatibility of blood for transfusion. The chapter on serologic technic comprises the Widal test, the Wassermann reaction and other complement fixation tests, the precipitation tests for syphilis, the examination of cerebrospinal fluid, and the examination of sputum. The last chapter concerns postmortem examinations. In an addendum is a method of preparing bacterial vaccines and taking photographs and photomicrographs of specimens. Copyrighted in 1897 and now in its eighth edition, this book indicates to a great extent the progress in pathologic technic. The chapter on the blood has been rewritten and gives now not only the technic of examination, but also the clinical interpretation of results. Among other sections that have been rewritten are those on pigments, fats and lipoids, and museum preparations.

PRACTICAL CHEMICAL ANALYSIS OF BLOOD A Book Designed as a Brief Survey of This Subject for Physicians and Laboratory Workers By Victor Carl Myers M.A. Ph.D. Professor and Director of the Department of Biochemistry New York Post Graduate Medical School and Hospital Second edition Cloth Price \$5 Pp 232 with 33 illustrations St. Louis C. V. Mosby Company, 1924

Systematic analysis of the blood as an aid to diagnosis has been developed largely within the last decade. The newer methods have yielded especially helpful information in diabetes, nephritis and gout, while the data obtained in renal diabetes tetany, rickets, diarrheal acidosis, eclampsia, pneumonia, cholelithiasis and many other pathologic conditions have given us new points of view for many of these disorders. This book aims to describe the chemical methods of blood analysis that have been found to be of definite value in diagnosis and treatment of disease. Generally only a single method is given for each constituent, as the methods described are especially suited to the author's scheme of analysis. However, the methods of the Folin-Wu system of blood analysis are given completely in a separate chapter. Most blood examinations required may be made on from 10 to 20 c.c. of blood. In the Folin-Wu system, which requires only 10 c.c., Myers points out that with this small amount of material there may be conditions in which the use of the system can scarcely be considered an advantage.

INSANITY AND LAW A Treatise on Forensic Psychiatry By H. Douglas Singer M.D. M.R.C.P. Professor of Psychiatry University of Illinois College of Medicine and William O. Krohn A.M., M.D. Ph.D. Cloth Price \$6 Pp 437 Philadelphia P. Blakiston's Son & Co. 1924

This is a concise statement of the basic facts and theories underlying current medical concepts of mental disorders, and of the related principles of law. A glossary is appended to smooth the way of the uninitiated over the difficulties of medical and legal terminology. A chapter on "Needed Reforms" follows the usual formula of deterministic psychology, the delinquent is not to be punished, but to be subjected to regimen adjusted by experts to his particular needs, for the purpose of curing or counteracting the antisocial flaws in his personality. The nonmedical reader may find the discussion of the medical and psychologic aspects of mental disorders difficult reading, but the book is nevertheless one that can be commended to lawyers and physicians alike when in need of tabloid information on the subjects it covers. To the physician still a novice on the witness stand and the lawyer not yet adept in the art of examining medical witnesses, the chapter on the physician in court will prove particularly helpful.

CANCER RESEARCH AT THE MIDDLESEX HOSPITAL 1900-1924 Retrospect and Prospect Compiled by Members of the Staff of the Hospital and Medical School and Issued by Authority of the Cancer and General Research Committee Edited by W. Sampson Handley M.S. F.R.C.S. Cloth Price 3 shillings 6 pence net London John Murray 1924

This is a compilation setting forth in compact form the summation of the work done in cancer at the Middlesex Hospital, long famous for its work in this field with the unique record of having conducted cancer research since the year 1792. The record as set forth in this small volume is an impressive one. The only criticism to be made is that in presenting the work of this institution in abstract, the impression is occasionally given that the results here recorded are final, whereas, in some instances at least, they have not been confirmed by other investigators.

Medicolegal

Neither Family Physician nor Surgeon Liable

(Mayer v. Hipke et al. (Wis.), 197 N. W. R. 333)

The Supreme Court of Wisconsin, in reversing a judgment, which was for \$2,000, against a family physician and for \$8,000 against an operating surgeon, and in directing that the complaint be dismissed, says that, in August, 1920, the family physician of Mrs. Mayer, becoming convinced that an operation was necessary, advised her removal to a hospital and called a surgeon into the case, who removed her right kidney, which was found to be infected. No entry was made into the abdominal cavity. The wound closed at both ends, but not in the center until about the last of June, 1921, after which it opened again, discharging considerable pus, and the surgeon performed a second operation, establishing drainage. Later, a third operation was performed and a rib resected to relieve a pus condition in the pleural cavity. The patient died in November, 1921. Her husband testified that during the last five days of her life particles of food were at times noticed on the dressing at the wound and that about two days before her death a gauze pack about 7 or 8 inches long in the form of a roll about 1½ inches in diameter, was removed from the wound. The jury found that the gauze pack was left in the abdomen of Mrs. Mayer by the surgeon when the operation was performed in August, 1920, and that he failed to exercise ordinary care, which was the proximate cause of Mrs. Mayer's death, that the family physician had also failed to exercise ordinary care at the operation, as also in diagnosis and treatment, which failures were proximate causes of the death. But it also appeared in evidence that the patient had in 1917 undergone an operation for appendicitis by some surgeon whose name did not appear in the record. As to the family physician, the record disclosed no evidence on which a failure to exercise reasonable care could be predicated. He was present in the operating room as family physician, did what he was told to do, and outside of that had no duties to perform. It was contended that it was his duty to instruct the nurses to count the sponges and to direct the operation, but there was no evidence to that effect. Standards of duty for a family physician attending an operation under circumstances appearing in this case cannot be established by argument or assertion. What constitutes ordinary care in a case such as this is to be determined by the testimony of those who know what it is, not as a matter of common knowledge. Nor was there any evidence of any failure on the part of the operating surgeon to exercise due care. The testimony left the question of whether or not the pack was introduced in 1920 or at the time of the appendical operation in 1917 in grave doubt, while the burden was on the plaintiff to satisfy the jury to a reasonable certainty that the pack was left in the body of the patient by the defendant surgeon who operated in 1920. It was not sufficient for the evidence to raise a suspicion or to indicate a possibility. It must be sufficient to remove the controverted question from the field of doubt and speculation into that of reasonable certainty. There was no evidence to show that it was the duty of the surgeon to explore an unopened abdomen in search of a suppurative foreign body. The testimony was the other way.

Legal Duty of Natural Relatives of Insane Persons

(State ex rel. Seagraves v. Wilson et al. (Okla.) 222 Pac. R. 567)

The Supreme Court of Oklahoma says it is well settled that at common law the duty of natural relatives of an insane person is of imperfect obligation only, and cannot be enforced. The ties of consanguinity prompt, or should prompt, relatives who are able in the care and keep of the indigent insane. In the absence of a statute, there is no obligation on a relative to maintain such a person. What relative, if any, should be made liable in such a case is a matter solely of legislative cognizance. There is no statutory authority in Oklahoma to compel the brothers of an adult, indigent, insane person to reimburse the state for expenses paid or to be paid in keeping such person as a public patient in a hospital for the insane.

Wherefore in this case, in which it was sought to require the brothers of an adult, indigent, insane person to reimburse the state for the expenses incurred in his care in the state hospital for the insane, a judgment in favor of the defendants is affirmed, and this notwithstanding that the man was committed to the hospital on the petition of one of the defendants, in whose home he had been cared for, temporarily, pending such commitment.

Rules Recognized—Case for Jury—Second Operation

(Houatt Cartwright (Wash.) 222 Pac. R. 496)

The Supreme Court of Washington, in affirming a judgment in favor of the plaintiff, says that she received a fracture of the left femur, near the hip, and was taken to a hospital operated by the defendant. There a roentgenogram was taken, and the following day the fluoroscope was used and the limb placed in a Thomas splint. The defendant testified that his examination disclosed a comminuted impacted fracture, and that he proceeded to use such methods as are known to surgery for the treatment of an impacted fracture. At the end of ten days, finding that the Thomas splint was occasioning trouble, he removed the splint and substituted a straight extension. This proving unsatisfactory, an angle box was used. The roentgen ray and the fluoroscope were never again made use of, but the limb was measured every day for three weeks in order to compare it with the right one. After remaining in the hospital for some time, the plaintiff was released with the left leg some three-quarters of an inch shorter than the right one, and with the left foot having an outward rotation of 80 degrees.

This court recognizes the rule, laid down so often that a surgeon is not liable merely because of a bad result. And that he is not responsible in damages in a malpractice suit if the treatment which he employs is that which is recognized and approved by those reasonably skilled in his profession practicing in the same neighborhood and in the same line of practice, and if he administers that treatment with a degree of skill and diligence as such practitioners ordinarily exercise in like cases. This court also recognizes that it is not a question of fact for the jury, but the court will determine that there is nothing on which the jury may pass, where reputable physicians and surgeons of equal skill and learning disagree in their opinion as to what the proper treatment should have been, and that the jury will not be allowed to accept one theory to the exclusion of the other. It is enough if the treatment actually employed had the approval of at least a respectable minority of the medical profession and is recognized by such as a proper method. The defendant contended that, applying these rules to the facts here, the case should have been taken from the jury and judgment rendered for him. But difficulty in arriving at this conclusion arose from the fact that there was a dispute here as to the nature of the fracture. The negligence on which the plaintiff relied to sustain the judgment which she recovered was that the defendant failed to use sufficiently often the roentgen rays and the fluoroscope, and that had he resorted to these aids he would have discovered the conditions which led to the ultimate unsatisfactory results. She conceded that the failure to use these aids was not negligence if the fracture was an impacted one. The testimony was conflicting as to whether the fracture was an impacted one or an unimpacted one, and with this conflicting testimony as to the nature of the fracture which was treated the court could not apply the rules to which reference has been made, and take the case from the jury.

There was another circumstance which was of weight and which the jury had a right to take into consideration, and that was that a second operation was found necessary to cure the situation resulting from the operation by the defendant.

Accident and Occupational Disease—Diseases Attributable to Accident

(Peru Plow & Wheel Co. v. Industrial Commission et al. (Ill.) 149 N. E. R. 546)

The Supreme Court of Illinois holds that where an employee was disabled by an inflammation of the lungs which was probably caused by his continued breathing of iron dust in his occupation, his disability was a disease of his occupation,

and it was error to make an award under the workmen's compensation act of the state as for an accidental injury. The court says that it is its view that the word "accident" is not a technical legal term. No legal definition has been given or can be given which is both exact and comprehensive as applied to all circumstances. Those things which happen without design are commonly called an accident—at least in the popular acceptance of the word. Any event unforeseen, not expected by the person to whom it happened, is included in the term. An occupational disease is a disease condition arising gradually from the character of the work in which the employee is engaged. It does not occur suddenly, but is a matter of slow development. An occupational disease is not an accident. An accident, as distinguished from an occupational disease, as the former is contemplated under the compensation law of Illinois, which does not cover occupational diseases, arises by some definite event, the date of which can be fixed with certainty, but which cannot be so fixed in the case of occupational diseases. In this case there was not one circumstance, incident or time that could be pointed to as the starting place of the employee's disability, and the court is forced to the conclusion that the disability did not arise out of an accidental injury.

But not every disease is occupational simply because the conditions that were the immediate cause of the injury obtained for a long period of time. Certain diseases are well recognized as being attributable to accident, such as those caused by the entering of a disease germ through breaking of the skin, as anthrax. Actinomycosis, a disease caused by handling wheat and barley, has been held to be an accidental injury, also, disability caused from inhaling poisonous fumes in attempting to put out a fire, paralysis, caused by exertion of a traveling salesman in running to catch a train while carrying heavy hand luggage, nephritis, caused by exposure of the employee after working in heat and steam, eczema, caused by exposure to fumes and splashes of carbon bisulphid, rheumatism and gangrene, following an injury caused by dropping a heavy weight on the foot. On the other hand, it has been held that illness caused to a seaman by general exposure to rough weather could not be held to be an injury by accident, and that the death of a stoker following a gradual collapse from exhaustion induced by work for several days in the tropical heat of the Red Sea was not death by accident.

The rule recognized in Illinois is that, in order that the disability be by reason of an accidental injury or the result of an accident it must be traceable to a definite time and place of origin. There must be some definite thing happen which can be pointed to as the immediate cause of the breakdown, although the employee may have been able to work in similar conditions for a considerable period of time prior to the happening of the event which was the immediate cause of his breakdown.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Oto-Laryngology Montreal Canada Sept 15 20 Dr Luther C Peter 1529 Spruce Street Philadelphia Secretary
American Association of Obstetricians Gynecologists and Abdominal Surgeons Cleveland Sept 18 20 Dr James E Davis 111 Josephine Avenue Detroit Secretary
American Electrotherapeutic Association New York Sept 9 12 Dr Richard Kovacs 223 E 68th Street New York Secretary
Colorado State Medical Society Denver Oct 7 9 Dr F B Stephenson Metropolitan Building Denver Secretary
Indiana State Medical Association Indianapolis Sept 24 26 Dr Charles N Combs 221 South 6th Street Terre Haute Secretary
Kentucky State Medical Association Louisville Sept 23 25 Dr A T McCormack 532 West Main Street Louisville Secretary
Minnesota State Medical Association St Cloud Oct 8 10 Dr Carl B Drake Guardian Life Building St Paul Secretary
Missouri Valley Medical Society of the Des Moines Sept 17 19 Dr Charles W Tassett 115 E 31st Street Kansas City Mo Secretary
North Dakota State Medical Association Bismarck Sept 10 11 Dr H J Rowe 5211 Upton Avenue S Minneapolis Minn Secretary
Pennsylvania Medical Society of the State of Reading Oct 6 9 Dr W F Donaldson Jenkins Arcade Pittsburgh Secretary
Vermont State Medical Society Burlington Oct 9 10 Dr W G Ricker St Johnsbury Secretary
Wisconsin State Medical Society of Green Bay Aug 20 22 Mr J G Crownhart 588 Jefferson Street Milwaukee Executive Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to *THE JOURNAL* for a period of three days. No foreign journals are available prior to 1920 nor domestic prior to 1923. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Titles marked with an asterisk (*) are abstracted below.

Atlantic Medical Journal, Harrisburg, Pa

27: 619-690 (July) 1924

- Practical Points in Pelvic Surgery T S Cullen Baltimore—p 619
 Preservation of Ovaries in Pelvic Surgery B M Ansprich Philadelphia—p 625
 Present Status of Minor Surgical Procedures in Gynecology R R Huggins Pittsburgh—p 631
 Surgical Reconstruction of Nose J W Bransfield Philadelphia—p 637
 Recurrent Hemorrhage into Vitreous and Vitreous of Young Persons L G Redding Scranton Pa—p 640
 Acute Otitis Media and Mastoid Involvement J I McLallen Pittsburgh—p 643
 Management of Ureteral Calculi W H Haines, Philadelphia—p 646
 *Rupture of Rectum from Instrumentation C G Brumbaugh Huntingdon Pa—p 651
 General Practitioner and Specialist T A Rupp Lewistown, Pa—p 652

Rupture of Rectum by Sigmoidoscope—Brumbaugh's patient sustained a rupture of the rectum from the introduction of a sigmoidoscope by an osteopath. Peritonitis developed and the patient's condition became serious. The treatment was expectant and supportive. A few days later there was a slight bloody, purulent vaginal discharge with a distinct colon odor, a small fecal stool and periodic oozing of pus and blood from the anus. One finger carefully introduced into the rectum encountered an indurated pitted area about $3\frac{1}{2}$ inches up on the anterior wall with the retroverted fundus in apposition to it. A diagnosis of recto-uterine fistula with right-sided salpingitis was made. The patient recovered in about four weeks. In Brumbaugh's opinion, the introduction of a full-length sigmoidoscope is a major diagnostic procedure, and to be classed with cystoscopy and ureteral catheterization from the element of risk to the patient. Its use should be restricted to those who have sufficient experience to recognize the significance of pelvic adhesions, and the skill necessary to effect its passage by gentle manipulation rather than force. It is certainly questionable if sigmoidoscopy comes within the legal limits of osteopathic practice.

Boston Medical and Surgical Journal

100 1103-1148 (June 26) 1924

- *Postoperative Massive Collapse of Lungs C C Lund and M Ritvo, Boston—p 1103
 *Acute Abscess of Lung Complicated by Massive Collapse of Lung H Elwyn New York—p 1108
 Five Cases of Brain Tumor W B Terhune New Haven Conn and A F Riggs Stockbridge Mass—p 1121
 Effect of Radium on Glaucoma J J Corbett Boston—p 1124

Postoperative Collapse of Lungs—Lund and Ritvo advise that gross displacement of the heart should be looked for in all postoperative and post-traumatic pulmonary complications. If it is present, with the displacement toward a side of the chest with an area of dullness or flatness, it means massive collapse of the lungs. All postoperative pulmonary cases in which the diagnosis is doubtful should be studied by the roentgen ray. This can be done with a portable machine without danger or discomfort to the patient. Recognition of these cases is important on account of the relatively good prognosis under conservative treatment and of the serious consequences which may come if the patient is tapped or pleura explored under a mistaken diagnosis.

Acute Abscess of Lung with Massive Collapse—The case reported by Elwyn represents the unusual picture of an acute abscess in the right lower lobe complicated by a massive collapse of the entire right lung. The cause of the abscess could not be determined. Two days before the onset of his symptoms the patient had been swimming. It is possible that while swimming he aspirated some water into the right lung which was responsible for an aspiration pneumonia, resulting nine days later in an abscess.

191 142 (July 3) 1924

- *Lymphatic Leukemia, Irradiation G B Minot and R Isaacs Boston—p 1
 Radiation Therapy of Thyroid and Ductless Glands G W Holmes Boston—p 10
 Roentgen Ray and Radium in Treatment of Nonmalignant Diseases of Uterus L B Morrison Boston—p 13
 Radium in Treatment of Nonmalignant Diseases of Skin F S Burns, Boston—p 16
 Roentgen Ray and Radium in Nonmalignant Diseases of Eye G S Derby Boston—p 20

Irradiation for Lymphatic Leukemia—Data are presented by Minot and Isaacs concerning ninety-eight cases of chronic lymphatic leukemia and fifty-seven of the acute form of the disease. End-results have been studied especially from eighty cases of the chronic form in patients over 30 years of age, fifty treated by intensive irradiation with radium or roentgen rays, and thirty that were not. The latter serve as a control group to the former. Irradiation had no detectable effect on prolonging the duration of either form of the disease. Irradiation, properly administered, undoubtedly benefits symptomatically cases of the chronic form though not to the extent that occurs in chronic myelogenous leukemia. Moderate or greater general improvement, after the first course of irradiation, occurred in 47 per cent of sixty-one cases rather slight improvement in 30 per cent and no improvement in 23 per cent. The efficiency of 10 per cent was increased strikingly. The chances of improvement are in fairly direct relationship with the time before death that treatment is given. The beneficial effects of irradiation in acute lymphatic leukemia are but evanescent and slight. Irradiation may induce a better production of the three formed elements of the marrow and lessen the activity of the formation of lymphocyte cells. Irradiation usually causes little or no improvement of the patient when the hemoglobin is 50 per cent or less, or when outstanding purpura with thrombopenia is present, or when there are many immature and atypical lymphocytes in the peripheral blood. The effect of irradiation on decreasing the size of lymph nodes or spleen in chronic lymphatic leukemia is apt to be proportional to the amount of improvement in the patient's general sense of well being. Treatment should be guided and prognosis formulated from correlated information obtained from the patient's history and physical signs together with complete blood examinations and basal metabolic rate determinations.

California and Western Medicine, San Francisco

22 307-364 (July) 1924

- Clinical Diagnosis of Syphilis E D Chipman San Francisco—p 307
 Acute Epidemic Encephalitis J W Shuman—p 311
 *Postoperative Care of Laparotomies C G Wilson Palo Alto Calif—p 315
 Hay Fever in Sonoran Belt of Intermountain District H J Templeton Hiawatha Utah—p 317
 Present Status of Treatment of Diabetes with Insulin W D Sansum and others Santa Barbara Calif—p 321
 Treatment of External Cancers A Davidson Los Angeles—p 324
 Surgical Prostate L C Jacobs San Francisco—p 326
 History of Anesthesia in California R F Hastreiter Los Angeles—p 329

Postoperative Care of Laparotomies—Wilson applies a 10 per cent hot magnesium sulphate stupe over the abdomen following a laparotomy. From four to six layers of flannel, at a temperature of 105 to 110 F, are laid over the entire abdomen and sealed wound, these stupes are kept hot with hot water bag or electric pad and are changed every hour.

Journal of Bone and Joint Surgery, Boston

6 503-754 (July) 1924

- Arthritis L T Swain Boston—p 510
 Treatment of Tuberculosis of Bones and Joints G R Girdlestone Oxford England—p 519
 Compression Paraplegia and Pott's Disease C Wallace New York—p 538
 Case of Multiple Bone Lesions C L Brown and D M Stiefel Boston—p 550
 Perirenal Abscess in Children W G Elmer Philadelphia—p 564
 Radius Curvus (Madelung's Wrist) Two Cases B H Moore Chicago—p 568
 *Habitual Dislocation of Patella W E Galie and A B Lemesurier, Toronto—p 575
 Case of Congenital Defect of Pectoral Muscles C B Bennett Berkeley Calif—p 583

- Treatment of Congenital Dislocation of Hip Z B Adams Boston—p 586
- *Congenital Absence of Radius K Kato Los Angeles—p 589
- Surgical Treatment of Infantile Paralysis of Lower Extremity J E M Thomson Lincoln Neb—p 627
- *Surgical Correction of Plantar and Adduction Contraction of Foot Arch J T Rugh Philadelphia—p 664
- Periarterial Sympathectomy A Krida New York—p 675
- Fracture of Femur J C Wilson Hartford Conn—p 680
- Correction of Burn Scar Deformity by Z Plastic Method S L McCurdy Pittsburgh—p 683
- *Correction of Paralytic Genu Recurvatum C H Heyman, Cleveland—p 689
- Fracture of Lesser Trochanter I Balensweig New York—p 696
- Apparatus for Preventing Toe Drop B B Nicholson University Va—p 704
- *Clasp for Retaining Extension Straps G T Tyler Jr, Greenville S C—p 706

Habitual Dislocation of Patella—The operation employed by Gallie and Lemesurier consists in tethering the patella itself by a strand of tendon or fascia to the internal condyle of the femur at the point which forms the center of the circle through the arc of which the patella moves on flexion and extension of the knee. The technic of the operation varies with the force that is required to hold the patella in place. Occasionally the force necessary is very great and in such conditions the authors use a thick piece of the Achilles tendon.

Congenital Absence of Radius—Two hundred and fifty cases recorded in medical literature up to 1923 are reviewed and tabulated by Kato and three new cases are reported.

Correction of Plantar Contraction of Foot Arch—Rugh does a modified Phelps operation. A pedicled flap of skin, fat and fascia is transplanted from the calf of the opposite leg. The purpose of the transplant is the interruption of the continuity of tissues which are pathologic and which constantly tend to shorten as a result of the inherent changes arising from the underlying causative factors.

Correction of Paralytic Genu Recurvatum—Heyman makes use of a modification of the Edwards operation for reconstruction of the lateral ligaments. Whereas the Edwards operation aims to construct bands with attachments at the normal sites of attachment of the lateral ligaments, the modification proposed consists of securing the femoral attachment as far posterior on the femoral condyles as possible, and on the medial side to obtain an anterior attachment on the tibia.

Clasp for Retaining Extension Straps—One of the difficulties attending the use of extension straps when applied to the leg is the pulling away of the straps just above the ankle. To overcome this difficulty, Tyler has devised a 'wish-bone' clasp with movable blades attached to hold the lateral straps against the skin immediately above the malleoli. Since no important vessels or nerves lie along the bones in this region, injury is not likely. Pressure can be controlled and adjusted easily made at the joint of the clasp, giving pressure only sufficient to overcome the pulling away by the weights.

Journal of Laboratory and Clinical Medicine, St Louis

9 663 732 (July) 1924

- *Significance of Glycosuria P L Marsh Ann Arbor Mich—p 663
- Preserving Specimens of Blood W Denis and J L Beven New Orleans—p 674
- *Calcium Content of Blood in Pathologic Conditions I Koechig St Louis—p 679
- *Pharmacology of Benzyl Alcohol and Its Esters. III. Effect of Benzyl Benzoate on Arterial Hypertension in Man C M Gruber and H H Shackelford St Louis—p 685
- Bacteriologic Study of Extirpated Tonsils L A Julianella Philadelphia—p 699
- Excretion of Creatinin in Uranium Nephritis R H Major Kansas City Kan—p 701
- Comparison of Wassermann and Precipitation Reactions in Various Stages of Syphilis M A Wilson and R M Nedley New York—p 704
- Clinical Syphilis and Standard Wassermann (Kolmer's) W F Lorenz and W J Bleckwenn Madison—p 709
- Gram Staining Properties of Treponema Pallidum D Wilkes Weiss Philadelphia—p 716
- Blood Counting Pipet C Reich New York—p 718
- Paraffin Section Method R T Hance Philadelphia—p 719
- Hydrogen Electrode Technic J P Baumberger Stanford University Calif—p 720
- Apparatus for Determination of Urea by Urease Method A A Horvath, Peking China—p 722
- Counting Rapid Rhythmic Movement J P Baumberger Stanford University—p 723

Significance of Glycosuria—Marsh summarizes his paper as follows. Any glycosuria should be considered diabetic until clearly proved otherwise. On the other hand, it must not be forgotten that there are a number of other syndromes in which glycosuria is a symptom. Emphasis is placed on the importance of maintaining the diabetic in a sugar-free state, even if his case be very mild or very severe, whether dietetic treatment alone be used, or insulin be used as an aid to dietetic treatment.

Blood Calcium in Disease—A decrease of calcium was observed by Koechig in a case of nephritis with uremia (86 mg), while milder renal, cardiorenal, and cardiac cases showed little decrease. A case of dysentery and chronic colitis showed a slight decrease (93 mg) in the calcium content of the plasma possibly due to an increased excretion of calcium into the large intestine. A single case each of pellagra (88 mg) and of osteomalacia (74 mg) showed a distinct decrease in plasma calcium as did also a case of adult tetany (81 mg). Only three cases showed an increase of the calcium content of the plasma two of these being Paget's disease (118 and 121 mg) and the third a pathologic fracture in which the roentgen ray findings showed a destruction of the bone (118 mg). After intravenous injections of calcium chlorid in a patient with adult tetany, the calcium content of the plasma rose and then returned to normal within one hour. It would appear, therefore, that calcium injection is not very effective in producing and maintaining an increased amount of plasma calcium. The low content associated with tetany is doubtless due to factors other than a mere insufficient supply.

Effect of Benzyl Benzoate on Blood Pressure—According to Gruber and Shackelford benzyl benzoate taken in 25 or 30 drop doses (20 per cent in alcoholic solution) has no immediate depressant effect on blood pressure. Benzyl benzoate taken in 30 drop doses four times a day, for from four to eighteen days, has no effect on the blood pressure in patients suffering with hypertension. The authors believe that benzyl benzoate has no action on the blood vessels when taken by mouth and that it should have no place in the physician's armamentarium in the treatment of the above condition.

Kansas Medical Society Journal, Topeka

24 189 218 (July) 1924

- Justice for Streptococcus M L Bishoff Topeka—p 189
- Application of Chlorid Determination in Well Water E G Brown J G Wahlm and G W Hill Topeka—p 191

Kentucky Medical Journal, Bowling Green

22 213 274 (July) 1924

- Treatment of Diphtheria of Larynx S S Watkins Louisville—p 216
- Pyrexias of Obscure Origin in Children P F Barbour Louisville—p 218
- Surgery of Spleen C A Vance Lexington—p 222
- Treatment of Ununited Fractures J M Salmon Ashland—p 226
- Disease of Colon C W Dowden Louisville—p 228
- Gallstone Ileus F W Rankin and A M McKeithen Louisville—p 236
- Endogenous Uric Acid in Conditions Other Than Gout and Nephritis J D Allen Louisville—p 240
- Surgery of Prostate O Grant Louisville—p 242
- Chronic Infectious Arthritis O R Miller Louisville—p 248
- Purpura Hemorrhagica Splenectomy M Flexner Louisville—p 252
- Uterine Fibroma Weighing Forty Seven Pounds M Y Marshall Henderson—p 253
- Life and Work of Edward Jenner S Graves Louisville—p 254
- Perforating Injuries of Eyeball R W Bledsoe Covington—p 257
- Glioma of Retina in Child Aged Two A Pfingst Louisville—p 259
- Pregnancy Complicated by Uterine Fibroma Postoperative Intussusception Nephritis Uremia Fatality L W Frank Louisville—p 260
- Endocrinology in Gynecology and Obstetrics S D Breckinridge Lexington—p 261
- Radiation in Benign Affection of Uterus Cases D Y and J P Keith Louisville—p 264

Michigan State Medical Society Journal, Grand Rapids

23 279 322 (July) 1924

- Retrobulbar and Intra Ocular Neuritis Due to Hyperplastic Changes in Ethmosphenoid Sinuses J M Sutherland Detroit—p 279
- Osteomyelitis L Dretzka Detroit—p 291
- Automobile Battery Burns of Eyes M C Loree Lansing—p 292
- Carcinoma of Large Intestine C D Brooks Detroit—p 294
- Traumatic Neuroses Relation to Surgeon R H Denham and F P Currier Grand Rapids—p 299
- Giardia Intestinalis Four Cases J R Jeffrey Battle Creek—p 303

New Orleans Medical and Surgical Journal

77 162 (July) 1924

- Practice in Central Africa R R King Mutoto, Congo Belge Africa — p 1
Pneumonia in General Practice S B Wolff Opelousas La — p 5
Monilia Pulmonalis in Fresh Sputum F M Johns New Orleans — p 8
Therapeutic Application of Roentgen Rays H G F Edwards Lafayette La — p 11
Malaria in Louisiana M A Barber, Crowley, La — p 16
Extra Uterine Pregnancy O P Daly Lafayette La — p 20
Syphilis of Stomach Cases D I Kerlin and W B Rawls Shreveport La — p 25
*New Anesthetic Gas J T Halsey, C Reynolds and H B Cook New Orleans — p 29
Oral Diagnosis H W Guthrie New Orleans — p 30
Provisional Prostheses and Early Weight Bearing in Amputations of Lower Extremities H T Simon, New Orleans — p 35

Propylene Anesthesia—Halsey and his associates describe their experiments with propylene which is said to be about three times as powerful an anesthetic as is ethylene. There are grounds for believing this gas, while composed mainly of propylene, contains other substances. Therefore, it is possible that its anesthetic powers are due to these contaminations. Even with this impure gas the margin of safety seems to be sufficiently wide. The poorest lot of gas prepared shows a margin of over 60 per cent, the best lot one of over 115 per cent. Biologic tests and physical and chemical theory show extraordinarily accurate agreement, and it is believed that more numerous experiments on animals will soon justify testing out this gas on human beings.

New York State Journal of Medicine, New York

24 751 786 (July) 1924

- Present Status of Investigations with Trypsinamide L Pearce and W H Brown New York — p 751
Intracutaneous Diphtheria Toxin Test B Schick New York — p 756
Management of Nervous Patient E L Hanes Rochester — p 759
Nervous Patient E B Angell Rochester — p 762

Ohio State Medical Journal, Columbus

20 417-480 (July) 1924

- *Differential Diagnosis of Hyperthyroidism O P Kimball Cleveland — p 421
Posterior Occipital Presentations, Eclampsia and Placenta Praevia G Fitz Patrick Chicago — p 425
Relation of Efficient Laboratory Service to Proper Care of Patient A A Eisenberg Cleveland — p 428
Treatment of Fracture of Olecranon Process by Hay Hook Tractor K Hale Wilmington — p 434
Role of Toxemia in Affections of Eye J W Wright Columbus — p 435
Acid Fast Factors in Control of Tuberculosis H L Rockwood Cleveland — p 436

Hyperthyroidism—Of the eighty-four cases studied by Kimball twenty-four were found to be extremely sensitive to iodine, small daily doses of iodine (10 mg is sufficient) intensified every symptom of hyperthyroidism and the basal metabolism rate was increased. In each of these twenty-four cases operation was advised and eighteen of these patients were operated on. In each of these eighteen cases, immediate and striking results were obtained. These patients have been followed for months and in every case the results have been permanent and most gratifying. Of the six who refused operation, three have been followed closely and various methods of medical treatment have been applied. No one of these three patients has shown any permanent improvement. Among the sixty cases in which the functional test was negative, that is, who were not sensitive to iodine, nineteen were operated on. The postoperative course of these nineteen patients presents a marked contrast to that of the patients who were sensitive to iodine. In no one of these nineteen cases did any definite, satisfactory result follow the thyroidec-tomy. The remaining forty-one cases were treated according to the findings.

Oklahoma State Medical Association Journal, Muskogee

17 169 190 (July) 1924

- Gout, Calcium Metabolism C W Heitzman Muskogee — p 169
Focal Infection as Cause of Urinary Diseases in Women F M Sanger, Oklahoma City — p 174
Sacro-Iliac Strain J C Johnston McAlester — p 176
Gonorrheal Rashies J S Hooper Tulsa — p 177
Internal Ear Diagnosis A C McFarling Shawnee — p 178

Public Health Journal, Toronto

15 241 289 (June) 1924

- Review of Recent Work on Diphtheria J G Fitzgerald — p 241
Relative Value of Sex Education J J Heagerty — p 258
Smallpox Epidemic in Windsor R R McClenahan — p 263

Radiology, St Paul

3 190 (July) 1924

- Roentgenology of Urinary Tract B H Nichols Cleveland — p 1
Therapeutic Radiation from Surgeon's Standpoint L L McArthur Chicago — p 7
Obstetric Roentgenography W A N Dorland Chicago — p 10
Chronic Pulmonary Streptococciosis F S Bissell Minneapolis — p 20
Short Wave Roentgen Rays in Other Than Deep Conditions A Seiland and W E Costlow Los Angeles — p 23
Roentgenologic Diagnosis of Diaphragmatic Hernia Seventeen Cases R D Carman and S Fineman Rochester Minn — p 26
Table for Fluoroscopic Examination of Fractures L R Sante St Louis — p 46
Light Proof Film Cabinet E Schons St Paul — p 48
Gross Pathology of Chest W W Wasson, Denver — p 49
Shadows in Aortic and Hilar Regions A Granger New Orleans — p 55
Human Cancer in Relation to Heredity H G Wells Chicago — p 60
Shadows of Calcified Areas in Bony Pelvis C G Sutherland Rochester Minn — p 69
Postoperative Roentgen Ray Examination in Dentistry B S Gardner Rochester Minn — p 74

Rhode Island Medical Journal, Providence

7 97 112 (July) 1924

- Digitalis in Heart Disease F T Fulton Providence — p 97

Southern Medical Journal, Birmingham, Ala

17 461 548 (July) 1924

- Creatinin Test for Renal Function R H Major Kansas City Mo — p 461
*Symptoms of Achylia Gastrica B W Fontaine Memphis, Tenn — p 466
Spirochetosis Bronchialis Case Report A E Greer Houston, Tex — p 469
*Tuberculosis in Infants O M Schloss New York — p 474
*Tetany in Breast Fed Baby Increase in Convulsions After Saline Hypodermoclysis C E Conrad Harrisonburg Va — p 477
*Multiple Myeloma Two Cases J W Scott Lexington Ky — p 478
Hair Growth T W Murrell Richmond Va — p 485
Diphtheria Control C C Hudson Richmond Va — p 489
Control of Hookworm Disease in South Alabama W G Smillie Andalusia Ala — p 494
Intra Ureteral Manipulations G R Livermore Memphis Tenn — p 500
Diagnosis and Treatment of Conditions of Vesical Neck E G Ballenger and O F Elder Atlanta Ga — p 506
Ankylosis of Elbow I Cohn New Orleans — p 511
Treatment of Deformities Secondary to Burns O L Miller Charlotte, N C — p 522
Prophylaxis in Obstetrics I Procter Raleigh N C — p 526
Strangulated Hernia with Perforation of Afferent Loop L F Watson Chicago — p 531
Local Anesthetics in Ophthalmic Surgery E Hill Richmond Va — p 532
Treatment of Asthma by Removing Obstructions of Upper Respiratory Tract E L Posey Jackson Miss — p 535

Symptoms of Achylia Gastrica—In analyzing the symptoms of 100 cases of achylia gastrica, Fontaine observed that while the symptoms of loss of weight and strength, pain and tenderness cramping and discomfort in the abdomen, accompanied by low blood pressure, are frequently present, they alone are not diagnostic of achylia gastrica and could be caused by other extragastric and intragastric conditions. The reliability of these symptoms is also greatly lessened because in 21 per cent of the cases of the series absolute achylia existed in the absence of any single symptom that could have been referred to the gastro-intestinal tract. Therefore, the diagnosis of achylia gastrica cannot be made from the history, from a study of the symptoms, or from a radiographic study, but it is absolutely dependent on an analysis of the gastric contents after a suitable test meal, and it will frequently be overlooked unless this analysis is made a routine part of every general examination. The presence of an utter achylia should always be confirmed by a fractional analysis according to the method of Rehfuess and it should be followed up by subsequent analyses at regular intervals.

Tuberculosis in Infants—According to Schloss most, if not all infants succumbing to generalized tuberculosis have passed through a stage during which the disease was localized and latent, and if the disease had been recognized then the chances for effective treatment would have been good.

Tetany Caused by Mother's Milk—Conrad believes that in the case that he observed, the mother's milk was the cause of the tetany

Multiple Myeloma—Two cases of multiple myeloma are reported by Scott, both with characteristic roentgen-ray findings and with Bence-Jones proteinuria. One case terminated in death in nine months. The other patient is still living and symptomatically in better condition than at any time in the last four years. Both cases presented very low kidney function evidenced by uremia, high nitrogen retention in the blood and low phenolsulphonaphthalein excretion, but without hypertension. One of the two cases with greatly impaired kidney function presented very small though definitely demonstrable, areas of disease in the cranial bones and lumbar vertebrae. There was an average daily excretion of approximately 10 gm of Bence-Jones protein. The color index was constantly 1 or 1 plus on several examinations, in contrast with the low index of secondary anemia usually present in these cases. In one of the cases spontaneous crystallization occurred in the urine on cooling after voiding. The blood also showed practically unchanged amounts of urea nitrogen and creatinin on ingestion of protein, ranging from 0.2 gm to 2.8 gm per kilogram in twenty-four hours.

Tennessee State Medical Association Journal, Nashville

17 35 77 (June) 1924

- *Ventral Tumors of Sacrum H W Hundling Memphis—p 35
- Surgical Pathology of Gallbladder and Ducts W A Bryan Nashville—p 45
- *Fractures of Skull Thirty Two Cases M B Davis Nashville—p 48
- Focal Infections in Pregnancy J F Adams Bradyville—p 53
- Hippocratic Oath E H Burd Dyersburg—p 56
- Insulin in Diabetic Complications W T DeSautelle Knoxville—p 61

Ventral Tumors of Sacrum—Hundling gives a resume of nineteen cases of ventral tumors of the sacrum (Middledorpf tumors). Five patients with ependymal cell gliomas were operated on. The average age was 46 years. One patient was perfectly well ten years after operation, and one was improved nineteen months after, but complained of disturbance of function of the bladder and bowels. One died of recurrence nine years after removal of the growth. An exploration was made in one case, the condition proved to be inoperable and the patient died fourteen months later of intestinal obstruction. The fifth patient had a recurrence two years after operation, but without discomfort. Dermoids were removed in four instances. The average age of these patients was 30 years. Postoperative data were obtained in three cases. One patient was well one year after operation, and another eight years after. One had a recurrence five years after the removal of the tumor. There were three patients with foreign giant cell tumors. The average age of these patients was 40 years. One was apparently well fifteen months after removal of the growth. Almost complete recovery was reported by another ten years later. The third patient died following operation. Carcinoma was found in two instances. One patient, aged 40 years, had an adenocarcinoma, and was practically well two years after operation. The other, aged 49 years, had a colloid carcinoma and was markedly improved three years following its removal. Myomas were removed in two instances. One patient aged 37 was improved three years after operation, and another, aged 56, died from recurrence one year after operation. One patient, aged 64 years with a myosarcoma died from recurrence one year after operation. One patient aged 19, died from recurrence fifteen months after the removal of a sarcoma. The growth was composed of foreign body giant cells with mitoses. An inoperable basal cell epithelioma was found in one instance.

Fracture of Skull—In the thirty-two cases observed by Davis there were nine fractures of the base with four deaths, a mortality of 44 per cent. four cases of massive brain injury with four deaths a mortality of 100 per cent, five simple fractures of the vault with no deaths, ten compound and depressed fractures of the vault with two deaths a mortality of 20 per cent and four cases of gunshot wounds of the skull with two deaths, a mortality of 50 per cent.

Texas State Journal of Medicine, Fort Worth

20 161 212 (July) 1924

- Treatment of Puerperal Infection C J Miller New Orleans—p 168
- Surgical Treatment of Solitary Tumors of Peripheral Nerves W O Ott Fort Worth—p 171
- Difficulties of Tumor Diagnosis K M Lynch, Dallas—p 175
- *Skin Manifestations of Leukemia and Allied Conditions I L McGlasson and C F Lehmann, San Antonio—p 177
- Systemic Effects of Oral Infection S B Riggs San Antonio—p 182
- Treatment of Cancer of Lower Lip O L Norsworthy, Houston—p 184
- *Nephrectomy Two Cases G T Hall Big Spring—p 188
- Direct Laryngoscopy with Directoscope of Haslinger S Israel, Houston—p 190
- Intracranial Hemorrhage in Newly Born Case Recovery J H Park, Jr Houston—p 192
- Roentgen Ray Treatment of Deafness H L Warwick Fort Worth—p 194
- Sterility Cause and Treatment R F Metcalfe, Fort Sam Houston—p 199

Skin Lesions in Leukemia—A case of Hodgkin's disease, one of lymphosarcoma, and one of mycosis fungoides are reported by McGlasson and Lehmann, showing skin changes which may be classed as leukamides, and also a case of lymphatic leukemia which presented skin tumors characteristic of true lymphomas.

Nephrectomy for Suppurating Kidney—In one of his two cases Hall did a preliminary nephrotomy and evacuated four quarts of pus. An operation for removal of the kidney shell was carried out under ether, seven days later. This operation was followed by a very smooth convalescence. The history of the case had been like that of intermittent hydronephrosis, but for years the urine had contained pus in large amounts. The second case was one of "acute kidney," a case of multiple septic infarcts of the kidney, characterized by the absence of practically all symptoms that would indict the kidney.

Virginia Medical Monthly, Richmond

51 197 264 (July) 1924

- Slit Lamp Microscopy H H McGuire Winchester—p 197
- Status of Tuberculosis in Richmond for 1923 W N Mercer, Richmond—p 200
- Variants of Staphylococcus and Streptococcus Simulating Gonococcus in Chronic Urologic Infections T V Williamson, Norfolk—p 203
- Inguinal Hernia D T Tayloe Jr, Washington N C—p 208
- Pylitis of Pregnancy S B Cary Roanoke—p 212
- Malnutrition in Schoolchildren C E Conrad Harrisonburg—p 214
- Malnutrition and Marasmus in Infants J S Weitzel Richmond—p 216
- Backache R M Hoover Roanoke—p 221
- Case of Mastoiditis Epidural Abscess with Apparently no Middle Ear Involvement J E Diehl Norfolk—p 223
- Adult Disabled T Wheelon Richmond—p 225
- *Pulmonary Tuberculosis Patient as Surgical Risk O O Ashworth Richmond—p 227
- Cancer of Cervix C Z Corpening Suffolk—p 230
- *Case of Complete Laryngeal Stenosis J R Gorman, Lynchburg—p 232
- *Treatment of Vincent's Angina T L Driscoll Richmond—p 233
- Psoriasis Case Report G T Brown Washington D C—p 234
- Electrocoagulation Methods in Treatment of Hemorrhoids J B H Waring Blanchester Ohio—p 235
- Determination of Kidney Function S H Rosenthal Lynchburg—p 238
- Bile Reaction in Urine W M Bowman Petersburg—p 240
- Endocrine Radiation to Improve Quality of Voice H H Rubin New York—p 241

Tuberculous Patient as Surgical Risk—Since rest and nutrition are the chief factors in treating tuberculosis, Ashworth feels that any operation, as for gallbladder disease, gastric ulcer, appendicitis, etc., which will relieve indigestion and promote assimilation of food with a minimum of danger from the operation, is a great aid in treatment of tuberculosis.

Complete Laryngeal Stenosis—Gorman's patient had worn a tracheotomy tube for twelve years because of obstructed breathing due to extensive ulceration. Examination of the larynx by indirect method showed extensive ulcerations involving the whole epiglottis, larynx, and extending down into the trachea. The vocal cords, both true and false, were entirely destroyed by the ulcerative process. The general condition of the patient was very good. The Wassermann examination showed a four plus blood. The local ulcerative processes healed quickly under antisyphilitic treatment but in the process of healing, there developed across the upper part of the larynx a very thick membrane completely obstructing the larynx. This occurred in the form of a weblike process extending from the base of the epiglottis in front along the

line of the false cords to the base of the arytenoids behind. Under local anesthesia, as much of the membrane as possible was removed with the aid of the direct laryngoscope. The larynx was dilated with Jackson's triangular laryngeal dilators. Free breathing was restored.

Treatment of Vincent's Angina—Driscoll asserts that 5 cc antimony and potassium tartrate, 1 per cent solution, injected intravenously, is a specific in cases of Vincent's angina.

West Virginia Medical Journal, Huntington

10 337 392 (July) 1924

- Surgical Advancement in Last Twenty Five Years M V Godfrey, Charleston —p 337
Diagnosis of Early Pulmonary Tuberculosis W C Vest Huntington —p 341
Consultant Service for Tuberculosis Clinics H Brown, Pittsburgh —p 343

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

47 109 259 (May) 1924

- Fundamental Nervous Processes in Cortex of Cerebral Hemispheres
I Principal Stages of Development of Individual Reflex Generalization and Differentiation J S Beritoff —p 109
Paratrigeminal Paralysis of Oculopupillary Sympathetic J G Raeder —p 149
*Muscular Rigidity of Paralysis Agitans, Relationship to Tremor F M R Walshe —p 159
*Plastic Tonus in Sequel of Epidemic Encephalitis D McAlpine —p 178
*Familial Cerebral Degeneration Affecting Lenticular Nucleus D Paterson and E A Carmichael —p 207

Muscular Rigidity of Paralysis Agitans—Walshe's observations demonstrated that the rigidity of paralysis agitans is abolished by intramuscular injections of procain, of the same strength as suffices to render the spastic muscles of a hemiplegic subject flaccid, that this flaccidity is obtainable without any impairment of voluntary power, or of the indirect faradic excitability of the muscle, that the tremor is unaffected by this means, and that certain striking changes are to be seen in the voluntary activities of muscles treated in this way. From this it is argued that the rigidity of paralysis agitans demands for its development and maintenance the integrity of the proprioceptive reflex arc arising in the muscle itself, while the tremor, whatever its nature, is not so dependent and thus differs essentially from the rigidity.

Plastic Tonus and Muscular Rigidity in Encephalitis—In McAlpine's case a condition of well marked plastic tonus existed in the limbs on the right side of the body, and this was associated with muscular rigidity, at times flexor in type and at other times extensor, which, under certain circumstances, closely approximated to that observed experimentally in animals in whom unilateral decerebration in the region of the midbrain had been performed. The left upper and lower limbs showed none of these phenomena, but were the seat of a rigidity typical of parkinsonism.

Familial Cerebral Degeneration—Paterson and Carmichael describe a condition of cerebral degeneration occurring in two children, which presents the following characteristics: (a) It is familial. (b) Clinically it gives rise to apathy and apparent blindness without changes in the fundi of the eyes. (c) There is an absence of paralysis and abnormal movements. (d) The children live from two to six months and occasionally up to 2 years of age. (e) It is probably due to an intra-uterine infection. (f) The severest pathologic changes are found in the lenticular nuclei, while the cortex is badly developed and degenerated.

British Medical Journal, London

1 1079 1118 (June 21) 1924

- Nutritional Disturbances of Infancy B Myers —p 1079
Heart Before Harvey J E Frazer —p 1083
*Larva of Warble Fly as Human Parasite F W Style —p 1086
*Etiology and Treatment of Rheumatoid Arthritis and Allied Diseases. S G Billington —p 1087
*Treatment of Migraine J L Greig —p 1089
Opium Poisoning and Pontine Lesions C O Hawthorne —p 1089
Surgical Emphysema Due to Parturition D A Harvey —p 1089

Larva of Warble-Fly as Parasite—A case of myiasis due to a warble-fly is reported by Style. The patient was 4 years of age. Attacks of severe pain and swellings about the head and neck were the chief symptoms. Curious features of the case were (1) the regular intervals between the appearance of the swellings. There were five distinct attacks with about ten days between each. (2) Their symmetrical situation. The first swelling was in the left eye, the second in the left eye, the third in the right eye and cheek, the fourth in the left eye the fifth in both eyes and cheeks. One maggot came from the right side of the scalp and two from the left side of the scalp. (3) The rapidity with which the edema subsided. The parasite is named *Hypoderma lineatum*, Vill, which is one of the two British cattle warble-flies, the other being *Hypoderma bovis*, De G.

Rheumatoid Arthritis—According to Billington a very high percentage of rheumatic affections may, for practical purposes be regarded as metastatic manifestations of focal bacterial absorption. In a small proportion of cases exciting causes, such as nervous shock, worry, trauma, etc., appear to play an important part. In another small proportion the disease supervenes on a febrile attack, though frequently in these cases a local septic focus has been lighted up. The three most important evidences of active arthritis are, pain apart from movement, the night pain being most characteristic, local tenderness and general debility with often a toxic facial aspect. Treatment consists in removal of the focus of origin, autogenous vaccine therapy, heat, diathermy and electrotherapy.

Treatment of Migraine—Greig believes in the gastric theory of migraine, that the condition is due to recurrent attacks of dilatation of the stomach and by means of regulation of the diet endeavors to maintain the stomach in its normal physiologic condition. The results are said to have been most satisfactory. Dilute hydrochloric acid is administered only during the first two weeks of treatment.

China Medical Journal, Shanghai

38 341 436 (May) 1924

- Radium Physical and Therapeutic Properties C N Frazier —p 341
*Osteomalacia in China F J Wampler —p 349
*Blood Serum Globulin in Schistosomiasis Japonica H E Melenev and H Wu —p 357
Chinese Drugs I Tang Kuei C F Schmidt B E Read and K K Chen —p 362
*Schistosomiasis Japonica W E Libby —p 376
Growth of Chinese S M Shirokogoroff and V B Appleton —p 400
Hookworm Control in Hainan N Bercovitz —p 413

Osteomalacia in China—Among some of the outstanding features of a survey reported on by Wampler were that more than 75 per cent of patients with osteomalacia had tetany, 28 per cent had a positive Chvostek sign, in 31 per cent the disease began during pregnancy, and in 30 per cent during the nursing period, one third of the patients reported edema over the affected parts, 80 per cent were worse in winter and spring, in 39 per cent the teeth were painful and loose. Out of a total of 130 children born to osteomalacic mothers, only fifty-four are living. There was also a familial tendency. The survey showed that osteomalacia resembles rickets in that it attacks people living in poor hygienic surroundings lacking sunshine, and who take insufficient exercise. The best results in treatment have been with cod liver oil and calcium. The doses given are one-half ounce cod liver oil, with 10 grains calcium lactate, morning and evening, or 15 grains calcium phosphate morning and evening. On this treatment the tetany disappears in a few days, the pains are relieved generally after ten days.

Blood Serum Globulin in Schistosomiasis—The globulin precipitation test was performed by Melenev and Wu in fifteen cases of schistosomiasis japonica, and it was positive in thirteen. In fourteen cases in which the percentage of blood serum globulin was estimated, the average was 534 per cent with a maximum of 854 per cent and a minimum of 282 per cent. The authors recommend this test as a confirmatory diagnostic procedure in schistosomiasis, and suggest that in cases under treatment the disappearance of the reaction may prove to be a valuable indication of the success of the treatment.

Tartar Emetic in Schistosomiasis—Libby states that tartar emetic, in doses of from 4 to 10 grains, will effect practically a cure in the mild cases and improve the moderately severe. But in the severe cases, where there has been marked injury to the liver and spleen particularly it will not stay the progress of the disease. If the drug is at all effective it will be noted by the time 12 grains have been given. If there is no beneficial effect with this amount, continued treatment is of little avail. From his experience tartar emetic is more toxic than has been believed.

Indian Medical Record, Calcutta

43 179 160 (May) 1924

- Intestinal Paralysis Cured by Galvanic Current J N Sarkhel —p 129
Passive Anaphylaxis A T Roy —p 131
Estimation of Calcium in Blood N K Sen —p 138
*New Test for Bile in Urine P Ganguli —p 138
Female Sex Glands Ovary S K Mukherji —p 138

Test for Bile in Urine—Ganguli adds a few drops of a 3 per cent solution of paradimethylaminobenzaldehyd in 50 per cent hydrochloric acid to 5 cc of urine and heats the mixture to boiling. Carefully heating the test tube above the level of the fluid, a green colored film will appear on the inner surface of the test tube. This test is said to be extremely delicate and 1/100,000 part of bile in the urine can be detected.

Journal of Tropical Medicine and Hygiene, London

27 121 174 (June 2) 1924

- Dr. Sambon's Cancer Inquiries W Simpson —p 123
Elucidation of Cancer L W Sambon —p 124

Lancet, London

1 1297 1346 (June 28) 1924

- Chaulmoogrates and Morrhuates in Treatment of Tuberculosis L Rogers —p 1297
*Antibacterial Power of Egg White A Fleming and V D Allison —p 1303
*Facial Phenomenon in Older Children S G Graham and G H Anderson —p 1307
Gullstrand's Slit Lamp L H Savin —p 1309
Diagnosis and Treatment of Diabetes Mellitus E G B Calvert —p 1310

Antibacterial Power of Egg-White—Fleming and Allison have shown that egg-white contains a bacteriolytic, bactericidal and bacterio-inhibitory substance which they have named lysozyme. On a susceptible bacterium the lytic power is still manifest when the egg white is diluted 50,000,000 times. The bacteriolytic power of egg-white from different species of birds varies considerably when tested to the same microbe. The egg-yolk has a very slight antibacterial action on a susceptible organism but when tested to a less susceptible microbe it has apparently no antibacterial power, and to some extent inhibits the bactericidal action of the egg-white. Egg-white inhibits the growth of most of the pathogenic bacteria tested, and has a definite lethal or lytic effect on many of these bacteria—e.g., staphylococcus, streptococcus, meningococcus, *Bacillus typhosus*, *B. anthracis*, etc. The lysozyme of egg white resists peptic and tryptic digestion, and following the ingestion of raw egg-white by the mouth the number of streptococci in the feces was temporarily much reduced. Egg-white added to blood in vitro maintains its antibacterial action and when injected intravenously into an animal it confers on the blood serum of the animal marked antibacterial powers which are still evident after several hours.

Facial Phenomenon in Children—In 1,723 children between the ages of 5 and 18 years, tested by Graham and Anderson, 29 per cent showed a positive facial phenomenon. A positive facial phenomenon in older children is not to be considered as evidence of latent tetany, because (a) there is no increased electrical excitability, (b) no other sign of tetany and no history of previous tetany could be obtained in any of the cases, (c) the sign varies from day to day, (d) the calcium and phosphorus content of the serum were not found to be altered, (e) the sign was found most frequently in the class of children in whom tetany rarely occurs, (f) treatment with calcium chlorid failed to produce a complete disappearance of the sign, as it does in cases of undoubted tetany. The fact that the sign occurred as frequently among healthy children as among ailing children and its common occurrence

in the children brought up under the best social conditions, have led the authors to attach little significance to its presence except as a possible indication of a neurotic disposition.

Medical Journal of Australia, Sydney

1 503 526 (May 24) 1924

- Ether and Ethyl Chlorid A P Murphy —p 503
Chloroform and Regional Anesthesia C A Thelander —p 505
Intratracheal Method of Ether Anesthesia R E Weaver —p 506
Auditory Hallucinations De W Henty —p 508
Infantile Paralysis of Cerebral Origin A W Campbell —p 512
Rupture of Spleen E Chenoweth —p 515

SUPPLEMENT

- Trachoma D D Paton —p 338
Prevention of Myopia J W Barrett —p 343
Acquired Axial Myopia F A Newman —p 345
Clinical Dangers from Wassermann Reaction and Use of Salvarsan J L Gibson —p 348
Sympathetic Ophthalmia J L Gibson —p 350
Arteriosclerosis Ophthalmic Signs and Symptoms J C Douglas —p 352
Renal Disease and Arterio sclerosis L J C Mitchell —p 354
Accidents at Sea Due to Visual Defects J W Barrett —p 357
Vision at Sea D D Paton —p 358
Causes of Blindness J W Barrett —p 359

1 527 554 (May 31) 1924

- Pulmonary Tuberculosis Sanatorium Treatment J G Hislop —p 527
*Early Postmortem Changes in Pancreas G Cameron —p 532
Ovary H Armstrong —p 539
*Ruptured Ovarian Cyst H F Perkins —p 540
*Unusual Dermoid W Trethowan —p 540

SUPPLEMENT

- Strabismus E T Smith —p 361
Lamellar Cataract J R Anderson —p 363
Sarcoma of Soft Palate Angioperiloma of Trachea Tumor of Carotid Body T S Kirkland —p 366
Nasal Catarrh R Pullen —p 370
Remote Effects of Chronic Tonsillitis C M Fildie —p 372
Intracranial Suppuration of Otic Origin F Andrew —p 377
Sinusitis in Children W K Hughes —p 380
Radical Frontal Sinus Operation Through Orbito-Frontal Wall After Treatment by Open Method R S Goddall —p 383

Early Postmortem Changes in Pancreas—This subject was investigated experimentally by Cameron. Postmortem changes affect the cells of the pancreas in the following order: (a) B cells, (b) A cells, (c) acinar cells. The most important changes occur within the first eight hours. Zymogen granules are much more resistant to postmortem change than the A and B granules. This is further evidence that the former differ from the latter in composition. The similarity of early postmortem in the islets to those occurring in experimental and human diabetes mellitus is apparent.

Ruptured Ovarian Cyst with Tubal Pregnancy—Perkins reports the case of a woman, aged 27 who had been operated on for a right-sided tubal pregnancy eighteen months before he saw her. Two mornings before he saw her she had awakened with a great pain "all over her stomach." At operation the abdomen was found filled with blood and blood-clots. The source of the bleeding proved to be a ruptured ovarian cyst on the right side. On the left side there was a tubal pregnancy and another large ovarian cyst. The tube was filled with blood and was on the point of rupture.

Retroperitoneal Dermoid Cyst—The dermoid cyst in Trethowan's case appeared to spring from about the level of the third lumbar vertebra, it was retroperitoneal and had grown forward in the fold of the mesentery. The cyst was filled with sebaceous material and hair. To its wall was attached a sausage-shaped tumor about 15 cm long and 7½ cm in diameter, tapering somewhat to the ends. At the free end there was located an oval "mouth" about 5 cm by 2½ cm from which five teeth protruded. The roots were firmly fixed in bony sockets. The body of the tumor consisted chiefly of fat. Running through its length was a slender bone, flattened from side to side, strongly suggesting a rib. At the fixed end of the tumor this bone was enlarged into a flattened base which was embedded in the wall of the cyst. Toward the free end of the tumor the riblike bone enlarged into a rounded extremity. The bony walls of the two enlarged extremities were of egg shell thickness and contained marrow without any cancellous bone. Other tissues seen in section comprised normal looking connective fatty fibrous tissues, blood vessels and here and there what appeared to be nerves.

Bulletin de l'Académie Royale de Médecine, Brussels

1 215 330 (April 26) 1924

- *Test for Irritable Heart—Dautrebande—p 215
*Curettage of Tuberculous Abscess—H. Schwens—p 248
*Metal Ions in Relation to Neoplasms—Slosse and Reding—p 268
Study of Hemolysis—Herman—p 291
Toxicologic Research on Calabar Bean—Schoofs—p 303
Case of Cleidocranial Dysostosis—Delchey and Ory—p 316

Test for "Irritable Heart"—Dautrebande describes a test based on the interval before return to the preceding figure of the alveolar carbon dioxide tension after a given physical exertion. With irritable heart, the output of the heart is much reduced, and the arterial blood shows gaseous alkalosis while the venous blood shows gaseous acidosis. The output of the heart at rest was found strictly proportional to the length of the interval before return to normal of the alveolar carbon dioxide tension after the test effort.

Operative Treatment of Chronic Tuberculous Abscesses—Schwens' method was summarized in the Belgium Letter in THE JOURNAL, August 2, p 372. He has treated nearly 500 abscesses in 150 cases, the patients between 6 months and 71 years old, and the results, he says, surpassed those obtained by any other method.

Action of Metallic Ions on Cancer—See Belgium Letter p 371.

Bulletins de la Société Médicale des Hôpitaux, Paris

48 893 939 (June 20) 1924

- Insufficiency of Anatomically Intact Kidney—M. Renaud—p 893
*Insulin in Infantile Diabetes—E. Apert—p 894
*Malignant Endocarditis in Pregnancy—Crussade and Racle—p 895
Portable Apparatus for Pneumothorax—Breger—p 902
Carotid Aneurysm—M. Leconte and P. Oury—p 906
Kidney Sequelae in Weil's Disease—J. Troisier—p 910
Serodiagnosis in Weil's Disease—Troisier and Rime—p 912
*Agglutination in Cerebrospinal Fluid in Weil's Disease—A. Pettit and E. Etchegoin—p 918
Alternation of Asthma and Eczema—Pasteur Vallery Radot and Huguéau—p 919
Conditions for Success in Serotherapy for Tuberculosis—A. Jous et al—p 923

Insulin in Diabetes with Infantile Diabetes—Apert presented a diabetic patient who at 17 years of age was stunted in his growth, 4 feet, 8 inches tall, and weighing only 63.8 pounds with defective nutrition of the skin and genitals. After a year of almost uninterrupted insulin treatment the young man has gained more than a third of his weight, but only 3 cm in height. The skin has now a healthy aspect and the genitals are developing normally. No other treatment was given. The infantile diabetes was evidently due to the diabetic insufficiency of the pancreas.

Aneurysm Complicated with Tricuspid Insufficiency—Leconte and Oury report a case of arteriovenous aneurysm of the left carotid artery and jugular vein complicated by tricuspid insufficiency, confirmed by roentgen ray. They say that, considering the gravity of the complication, removal of the aneurysm is necessary.

Agglutination of Spirochetes in Cerebrospinal Fluid—Pettit and Etchegoin announce that in icterohemorrhagic spirochetosis the cerebrospinal fluid like the blood serum, causes agglutination of the spirochetes.

Comptes Rendus de la Société de Biologie, Paris

91 49 140 (June 20) 1924 Partial Index

- *Bacterial Hemolysis—E. Wollman and I. A. Graves—p 50
*Fecundation in Hens—E. Iwanow—p 54
*Neurotropic Virulence of Rabies Virus—C. Levaditi et al—p 56
*Rabies Virus in Oil—P. Remlinger—p 59
*Bacterial Origin of Indican in Urine—A. Distaso—p 61
*Absorption of Oil by Pleura—L. Binet and J. Verne—p 66
*Jaundice of New Born Mules—Moussu et al—p 68
*Shock Protects Against Strychnin—Arloing and Langeron—p 73
*Gage for Pressure in Capillaries—A. C. Guillaume—p 75
Action of Roentgen Ray on Isolated Organ—J. Jolly—p 79
Curative Action of Diphtheria Antitoxin on Experimental Diphtheria—C. Zoeller—p 81
*Passage of Metals Through Placenta—H. Vignes—p 82
*Inactivation of Sea Urchin Spermatozoa—E. Godlewski—p 84
*Rays Emitted by Animal Tissues—A. Gurwitsch—p 87
Influence of Insulin on Respiration of Tissues—J. De Cloet and J. Van Canneyt—p 92
Influence of Cold Baths on Acid Base Balance of the Blood—L. Dautrebande—p 94

- *Experimental Hyperglycemia—Stricker and Bouckaert—p 97
Glucose Insulin Equivalent—Bouckaert and Stricker—p 100
Heat Given Off Under Influence of Insulin—J. P. Bouckaert and W. Stricker—p 102
Influence of Strychnin on Reflex Arc—Bremer and Ryland—p 110
Osmotic Pressure of Serum Proteins as Factor in Edema and Arterial Hypertension—P. Govers—p 116
Blood Sugar in Anaphylactic Shock—E. Zund and J. La Barre—p 121
Variations in Alkalinity of Blood in Anaphylactic Shock—Idem—p 126
Atropin Protects Against Anaphylactic Shock—Idem—p 132
*Tar Induced Sterility in Mice—J. Maisin and P. De Smedt—p 134
Nature of Primary Blood Cells—S. Gandolfo—p 139

Bacterial Hemolysis and Proteolysis—Wollman and Graves experiments with the streptococcus and proteus proved that bacterial hemolysis is not accompanied by proteolysis.

Experiments on Fecundation in Fowls—Iwanow injected a weak antiseptic solution to kill the spermatozoa in the whole genital tract of the hen. The hen was still laying fertilized eggs after three weeks' separation from the cock. The necropsy of hens killed at different intervals proved that motile spermatozoa were present in all parts of the tube five hours after the fecundation, that the number and motility of the spermatozoa were considerably diminished by the second day, and that they had disappeared entirely by the third day. His explanation is that an egg cannot be fertilized after it leaves the follicle, but that spermatozoa may penetrate through the membranes into the follicle, and impregnate not only the ripe egg, but even some of the unripe.

Fixed Rabies Virus—Levaditi, Nicolau and Schoen's conclusion from their experiments is that rabies virus which has become adapted to the rabbit and changed into a fixed virus does not lose its virulence for monkeys if injected intracerebrally. As the same result was obtained in a chimpanzee the species closest to man, it may be assumed, they say, that the fixed virus has the same pathogenic neurotropic action on the human central nervous system. The Pasteur treatment thus utilizes a manifestly virulent virus. It has proved safe only by the desiccation undergone and by the subcutaneous mode of injection.

Olive Oil in Preservation of Rabies Virus—Remlinger believes that olive oil cannot be used instead of glycerin in preservation of the brain and the spinal cord as it does not protect the nervous substance against invasion by microbes during and after death. But it is different if the oil is mixed with some antiseptic such as camphor for instance.

Bacterial Origin of Indican in Urine—Distaso's experiments on guinea-pigs proved the existence of indican in the urine when the colon bacillus was present in the feces and not without.

Absorption of Oil Through Pleura—From ten to twenty days after an injection of rancid oil into the pleura of a dog Binet and Verne found pseudomembranes on the surface of the lung and pronounced proliferation of connective tissue beneath the pleural epithelium. The oil did not seem to be absorbed. An injection of an oil which did not contain any fatty acid was followed by absorption of the oil. The absorption probably occurs through the epithelium of the pleura. It may be assumed that the oil absorbed by the pleura reappears in the lung and is there destroyed. This absorption is different from the absorption of fatty substances through intestinal villi as fat corpuscles were never seen in the cells of the epithelium.

Jaundice in Young Mules—Moussu, Giraudeau and Maubaret describe a disease of the mule which occurs in the first four or five days after birth and is manifested by yellowish discoloration of the mucous membranes and blackish urine. The death rate is at least 50 per cent. The microscopic findings were similar to those in a grave anemia with pronounced destruction of corpuscles. The hemolysis is evidently consecutive to a change in the equilibrium of the blood fluid. Treatment consists in promoting coagulation. An intravenous injection of 50 cc of hemopoietic horse serum (from the third serial venesection) cures in 90 per cent of the cases. A complete recovery occurs in two or three days, although the jaundice persists a little longer. This injection may be used as preventive therapy in the newly born mule, before appearance of any signs of the disease.

Anaphylactic Shock Protects Against Strychnin—Arloing and Langeron report that an anaphylactic shock (second injection of serum or peptone) may occasionally protect a rabbit or guinea pig against an otherwise lethal dose of strychnin.

Gage for Pressure in Capillaries—Guillaume gages the capillary pressure with the spectroscope. His method is based on the disappearance of the oxyhemoglobin band as the capillary loops are emptied by compression of the skin.

Passage of Manganese Through Placenta—Vignes injected intramuscularly into a gravid guinea pig a solution of manganese. The amount of manganese found in the fetus was minimal compared with the quantity found in the organs of the mother and in the placenta. The findings in the fetus were similar to those following the administration of arsenic, lead and mercury, but noticeably less than when bromin is administered.

Inactivation of Sperm of Sea Urchin by Foreign Sperm—The ova are not affected but the spermatozoa are agglutinated and rendered inactive by admixture with spermatozoa from foreign but closely allied species. The alkalinity of the medium is an important factor.

Rays Emitted by Animal Tissues—Gurwitsch has confirmed the emission of rays by certain plant roots (garlic onion), and that these rays induce karyokinesis in other roots. He now announces that similar rays are emitted by living tadpoles and by emulsions of their tissues.

Combustion in Experimental Hyperglycemia—Stricker and Bouckaert studied with the help of a differential calorimeter the curves of the heat given off in animals subjected to continuous infusion of glucose or injection of epinephrin. An injection of epinephrin causes a hyperglycemia accompanied by increased metabolism, while infusion of glucose is followed by hyperglycemia and a decrease of metabolism. It seems that the glucose is not oxidized immediately in the blood; a hypodermic injection even in an animal fasting for several days does not increase the combustion. This may be explained they say, by a specific action of the epinephrin or by the fact that the glucose had already passed through the glycogen phase.

Glycemia in Anaphylactic Shock—Zunz and La Barre's experiments on guinea-pigs showed in the acute anaphylactic shock a phase of hyperglycemia accompanied by excessive proportions of the proteid sugar, and an increasing of lactic acid in the blood. This was followed by a phase of hypoglycemia with a notable increase of lactic acid in the blood.

Sterility Induced by Tar—Massin and De Smedt report observations on mice treated with coal-tar. Sterility occurred about the second month of the applications and persisted about two months after suspension. The course lasted four months. Fertility was probably regained, they say in all the mice. This sterility may be due to a lack of germ cells or to endocrine insufficiency of the genital or other organs; for instance, of the thyroid.

Journal de Medecine de Lyon

5 351 380 (June 20) 1924

*Paralysis After Preventive Treatment of Tetanus J. Lepine—p. 351
Disturbances of Speech J. Froment—p. 355
Prolonged Paralytic Syndrome in Alcohol Poisoning R. Courjon—p. 363
Hemorrhages in Epidemic Encephalitis J. Dechaume and P. Sedrillon—p. 365

Brachial Paralysis After Preventive Treatment of Tetanus—Referring to two cases, Lepine emphasizes that paralysis consecutive to this treatment affects the nerves of the upper extremities, especially the brachial plexus, mostly on the right side. In some cases the lower limbs were slightly affected. The clinical feature is a severe pain in the shoulder radiating along the arm and in a few days incomplete paralysis with loss of the tendon reflexes. Amyotrophy with partial degeneration is soon noted; fibrillary contractions were observed only in one case. The sphincters and the sight are intact. The lesion affects the nerve root, the nerve itself and the nerve centers are not touched. The disturbances seem to be more pronounced if associated with an anaphylactic reaction in subjects previously injected with the antiserum. But the nervous disturbance does not correspond to the

intensity of the anaphylactic phenomena, and it may be assumed that it is caused by the tetanus toxin of the antiserum. The disturbances have persisted for a year or more in the experiences that have been published even in cases with final recovery.

Paralytic Syndrome in Alcoholic Poisoning—Courjon reports general paralysis in two cases of chronic alcohol poisoning—a paralytic syndrome rather than progressive general paralysis. He confirms the favorable course without any treatment.

Hemorrhages in Epidemic Encephalitis—Dechaume and Sedrillon observed two cases of epidemic encephalitis combined with a hemorrhagic syndrome. One patient presented a purpura followed by scarlatiniform desquamation, in the other case the digestive tract was affected, with hematemesis and melen. In Sinton and Regnards case with purpura necropsy showed a hemorrhagic focus in the right hemisphere. The hemorrhage may depend on the activity of the virus, or on changes in the hematopoietic organs, or lesions of the vessels.

Presse Medicale, Paris

32 553 564 (July 2) 1924

Immunization Against Tuberculosis by Modified Tubercle Bacilli Calmette et al.—p. 553 See abstract p. 47

*Polyradiotherapy in Local Tuberculosis J. Suidman—p. 555

Polyradiotherapy in Bone and Joint Tuberculosis—Suidman reports the results of treatment of local tuberculous lesions in 200 cases by the ultraviolet rays alone or in combination with other forms of radiant energy. He emphasizes the significance of the skin reaction due to congestion of the capillaries and the simultaneous stimulating of endocrine organs through the sympathetic. He begins with a one minute exposure the mercury quartz lamp at a distance of from 50 to 70 cm. each following exposure is prolonged by one minute, and the distance is decreased to a minimum of from 20 to 30 cm. After appearance of the erythema, the dose is reduced by about a half and then again increased till reaching the skin dose. He gives two or three irradiations in a week. He claims to have had surprising success in the treatment of skin disturbances, cold abscess, adenitis, osteoarthritis in some pleurisies, in peritonitis and especially with fistulous lesions. The roentgen ray produces a local, but a deep action; the ultraviolet rays affect favorably the general condition, and the infra-red relieve pain. The range was from 1 200 to 12,500 angstroms.

32 565 576 (July 5) 1924

The Hydremia Due to Insulin F. Vidal et al.—p. 565

Treatment of Scurvy Signoret—p. 566

Congenital Disturbances Due to Roentgen Ray A. Schwab—p. 566

Structure of Atoms and Their Chemical Affinity A. Strohl—p. 567

Refractometric Examination During Insulin Treatment—Widal, Abrami, Weill and Laudat point out the action of insulin on the water metabolism in diabetes. In eight cases of diabetes with acetonuria during nineteen courses of insulin treatment, the refractometer never showed concentration of the blood, but dilution was evident in fifteen instances. The dilution occurred the first or second day of the treatment, the serum protein decreased the next day from 91 to 76.8 gm and the dilution persisted and even increased after the treatment had been discontinued. A slight change in the water metabolism occurs in almost all cases but is not recognized clinically unless with the help of the refractometer. There is no parallelism between the blood dilution and retention of water nor between the hydremia and glycemia, acidosis of the urine and assimilation of carbohydrates.

Policlinico, Rome

31 293 352 (June 1) 1924 Medical Section

Auto Agglutination in Blood of Woman of 27 V. De Benedetti—p. 311

Clinical Use of the Hemocrit L. Pezzotti—p. 319

Blood Sedimentation Test C. Scuderi—p. 331

Hemorrhagic Diatheses C. Toscano—p. 342

31 353 416 (July 1) 1924 Medical Section

*Early Intradermal Reaction in Echinococcosis E. Trenti—p. 353

Amard's Coefficient in Infections A. Brugi—p. 366

Schick Test in Exanthems R. Doria—p. 372

Heredity of Blood Groups P. Mino—p. 380 Begun p. 293

Blood Cholesterol in Children G. Macciotta—p. 406

Early Intradermal Reaction in Echinococcosis—Trenti found Casoni's intradermal reaction in human echinococcus disease superior to other biologic diagnostic methods

Ambard's Coefficient in Infections—In Brugi's experience, the ureosecretory coefficient was almost constantly higher in general infections. This sign of impaired renal function closely paralleled the fever, and disappeared in the convalescence of patients with normal kidneys

Schick Test in Exanthems—Dorri made the Schick test in various exanthematous diseases. He found that its basis is entirely different from that of the tuberculin reaction which better parallels Schick's pseudoreaction

Heredity of Blood Groups—Mimo publishes an extensive study on the heredity of blood groups. The few exceptions to the rule (thirteen families out of 409) do not prove much—partly because of possible technical errors, partly for obvious reasons

Blood Cholesterol in Children—Miccioffa found a variable but as a rule larger, proportion of cholesterol in the blood of nurslings. This is probably due to the food. In an attack of malaria and in acute bronchopulmonary processes the blood cholesterol diminishes. It is increased in febrile and destructive tuberculosis of the lungs in children

Repertorio de Medicina y Cirugía, Bogota

15 357 184, 1924

- Ovarian Cysts at Advanced Age N. Buendia—p. 340
- Exstrophy of the Bladder in Child with Dubious Sex Idem—p. 343
- Serologic Tests in Epidemic of Fever at Bucaramanga D. D. Mac Cormick—p. 347
- Comments on the Medical Faculty of the University of Bogota Alan Gregg (New York)—p. 357
- Mortality at Bogota E. Enciso Ruiz—p. 362
- Modern Tendencies in Medical Education A. Gregg—p. 365
- Alimentary Dyspepsia in Children J. G. Escallon—p. 372 Cont'd

Ovarian Cysts at an Advanced Age—Buendia states that torsion of an ovarian cyst compelled intervention in the woman of 85, and a second cyst was found on the other side. One contained 2 and the other 15 liters of fluid. The semi-seated position aided in the prompt recovery after their removal

Measles Peaks at Bogota—Enciso Ruiz relates that since early in the century measles has caused a large number of deaths every eighth year at Bogota. The next peak is due in 1930. Each eighth year the epidemic spreads rapidly in five months and then dies out from lack of further susceptible subjects or loss of virulence. The virus may persist for seven years in some intermediate host until it acquires virulence for man again

Archiv fur Gynakologie, Berlin

122 1496 (July 1) 1924

- Choice of Anesthetic in Gynecologic Operations Peyser—p. 1
- Obstetric Examination Through Rectum R. Demme—p. 19
- Young Human Ovum P. Meyer—p. 38
- Physiology and Pathology of Round Ligament M. G. Serdjukoff—p. 88
- Embryology and Physiology of Clitoris Region T. Temesvary—p. 102
- Ovarian Artery with Ovarian Tumors S. di Francesco—p. 129
- True Peritoneal Pregnancy W. Poten—p. 134
- Venous Pressure During Pregnancy and Parturition Runge—p. 142
- Does Weather Influence Occurrence of Eclampsia? Oppenheimer—p. 158
- Metastatic Puerperal Affections A. Mayer—p. 168
- Duplications of Female Genitals R. Zimmermann—p. 184
- Behavior of Heart During Childbearing S. Prussulides—p. 200
- Exogenous Factors and Development of Fetus Peller and Bass—p. 208
- Morphologic Changes in Blood in Puerperal Affections in Relation to Bacteriologic Findings Philipp and Fuss—p. 239
- Pregnancy and Suppuration in Adnexa R. Krauter—p. 253
- Parenteral Protein Therapy in Adnexitis H. Nevermann—p. 275
- Relations Between Ovaries and Renal Diabetes H. Kustner—p. 282
- Radiotherapy of Menstrual Derangement in Girls F. Gal et al.—p. 310
- Reliability of Sachs Georgi Reaction in Pregnancy Tsakyroglu—p. 333
- Wassermann Test in Retroplacental Blood Finkener and Neugarten—p. 341
- Cystic Corpus Luteum and Cystic Follicles H. Ieki—p. 406
- Retrogressive Metamorphosis in Adenomyomas W. Schiller—p. 429
- Peritoneal Polycystic Lymphangioma E. Puppel and G. B. Gruber—p. 440
- Etiology of Hyperplasia of Uterine Mucosa A. A. Babes—p. 448
- Findings in Soft Parts in Primiparas E. von Graff—p. 469
- Butter Flour Mixture in Infant Feeding P. Schumacher—p. 479
- Multiple Hemangiomas with Cavities in New Born Infant Runge—p. 491

The Venous Pressure During Pregnancy, Delivery and Puerperium—Runge determined on nongravid women that the venous pressure in arm and leg was equal. In the pregnant on the other hand, the pressure in the veins of the legs is higher than in the ulnar vein, even from the first months of the pregnancy. The importance of this for development of varices is manifest. In the puerperium the venous pressure in the legs drops far below the level of the pressure in the median vein. This predisposes to thrombosis

Metastatic Puerperal Affections—Mayer was impressed with the severity of the complications in the genital apparatus when infectious sore throat developed in a woman who had just been delivered. This was especially noticeable during the influenza epidemics. His experience teaches the medicolegal importance of the fact that fever developing during the puerperium is no proof that the fever is of genital origin. Even when genital infection develops during influenza, it may be merely the metastasis of the influenza and not true puerperal fever. Not only the courts but the laity should bear this in mind. There seems to be a special tendency for influenza to recur during confinement. A severe general infection can proceed from tonsillitis even when the local findings in the tonsils are not grave. The micro-organisms found in the genital organs need not necessarily be the same as those found in the primary disease. With mixed infection, one or the other may predominate

The Behavior of the Heart During Pregnancy and the Puerperium—In von Jaschke's service the condition of the heart is recorded in detail in all the women. The findings were pathologic in 28 per cent of the 2,210 maternity cases in a recent four years but the outcome showed that the prognosis is not inevitably grave with a heart defect not even with failing compensation. If the myocardium is still vigorous, the defect compensated, and there is no complicating disease, the outlook is not unfavorable. The danger comes with complications, recurring endocarditis, nephritis, extensive tuberculous processes curvature of the spine, etc. Of all the heart defects the mitral, especially mitral stenosis, is most inclined to become aggravated during childbearing

Pregnancy with Suppurative Adnexitis—Krauter remarks that suppurating processes in the adnexa generally preclude pregnancy, but conception is possible. The diagnosis is difficult, but the pain generally gives the clue even early in the pregnancy. The mortality averages 40 per cent, owing to the difficulty of differentiation, the frequency of rupture from compression by the enlarging uterus, and the spread of the infection to the uterus. In contrast to the principle in gynecology of conservative treatment of pyosalpinx here operative measures are called for at once. If the uterus is not molested, the pregnancy is not interrupted

Ovaries in Relation to Renal Diabetes—Kustner's tabulated details from 150 parturients show that the renal diabetes which seems to be physiologic in pregnancy in women and animals disappears as term approaches. In only 20 per cent did the renal diabetes persist into parturition. A tendency to glycosuria was evident also in nongravid women a few days before the menses and in animals during rut. In gravid animals, removal of the ovaries arrested the renal diabetes at once, but not removal of the uterus. Implanting ovaries from gravid animals in nongravid animals induced renal diabetes, persisting for several days. As this physiologic renal diabetes is observed from the very first of the pregnancy, it may serve in diagnosis of pregnancy. In three of his cases it was evident only a few days after the nonappearance of the expected menses. He has the patient drink freely before the test, and then injects 0.5 mg. of epinephrin fifteen or twenty minutes after ingestion of 10 gm. of glucose (in tea). The blood sugar in the 150 women never surpassed the physiologic limit of 0.2 per cent and consequently it is not necessary to determine the blood sugar in applying the test for the diagnosis of early pregnancy

Importance of Wassermann Test in Parturients—This communication summarizes eleven years of systematic application of the Wassermann test in all maternity cases. It has revealed unsuspected syphilis in a number of cases and thus proved a guide for management and treatment of the new-

born as well as of the mothers themselves. With positive reaction in the retroplacental blood, the test was repeated on the arm blood unless there were unmistakable signs of syphilis. The reaction is more dependable the shorter the interval between obtaining the blood and the serologic test. In their 327 positive cases there was nothing else to indicate syphilis in five sixths of the total. In 40 per cent the patients were unaware of their infection and it would have escaped detection without the test. The Wassermann test of the blood from the umbilical vein is no criterion as to the presence or absence of syphilis in the new-born child. A positive reaction in the mother absolutely forbids giving the child to a healthy wetnurse, but the children of positive mothers can be interchanged, which often proves a great convenience in stimulating the breast to better secretion.

The Soft Parts Findings in Primiparas.—Von Graff concludes from study of 226 primiparas that in about 20 per cent we can count on the external os keeping its size unmodified until actual labor pains begin and the cervix otherwise is fully dilated. The os, however, is usually dilated enough to admit a finger fully four weeks before the birth, even in primiparas. The cervical canal in about 66 per cent of the women was shorter from the twenty-eighth to the thirty-sixth week and thereafter and in the last month, even in the primiparas, was decidedly shorter.

Deutsche medizinische Wochenschrift, Berlin

50 899 938 (July 4) 1924

- Treatment of Cataract W. Uthoff—p. 899 Cont'd
- *Hormone Treatment of Rickets H. Vollmer—p. 901
- *Disappearance of Chlorosis T. Dencke—p. 902
- *Hemoclastic Crisis and Vegetative System W. Simon—p. 903
- *Culture Medium for Typhoid Group Hartoch and Schlossberger—p. 904
- *Differentiation of Typhoid Group W. Joffe—p. 905
- *Heterotopic Epithelium in Ovaries E. Stubler—p. 908
- *Hereditary Cancer Types J. H. Kaiser—p. 909
- *Results of Amputations Bohm—p. 911
- *Painful Points on the Thorax Tellgmann—p. 914
- Syphilis of the Nervous System J. H. Schultz—p. 914
- Technic of Blood Transfusion Lichterfeld—p. 914
- *Treatment of Angiomas E. Moser—p. 915
- Caps for Pipets F. v. Kovats—p. 916
- Mineral Metabolism and Treatment E. Starkenstein—p. 917
- Law on Welfare of Adolescents W. Lustig—p. 919
- *Death Rate After Seventy E. Roesle—p. 921
- Teaching Hygiene by Radio P. Frank—p. 922
- Hygiene Education in Russia N. Semaschko—p. 923

Hormone Treatment of Rickets.—Vollmer studied the influence of various hormones on the excretion of acids. The results of his investigations encouraged him, with Gyorgy, to treat rickets with from 6 to 12 injections of extracts from the pituitary, thymus and ovary, alternately, every other day. The patients recovered in two or three weeks.

Disappearance of Chlorosis.—Dencke attributes the disappearance of chlorosis to the discarding of corsets by the present young generation. The corset injured the liver and spleen—both important organs of iron metabolism.

Hemoclastic Crisis and Vegetative System.—Simon observed an alimentary leukopenia in almost every one of his twenty-nine cancer patients. The reaction was absent in cured cases. Slight roentgen irradiation of the pituitary and infundibulum region inverted the reaction into leukocytosis.

Culture Medium for Typhoid Group.—Hartoch and Schlossberger describe a milk-agar medium which allows growth of paratyphoid B and the enteritidis group but none of typhoid or paratyphoid A.

Differentiation of Typhoid Group.—Joffe recommends a peptone agar with salts from milk as a medium for culture of the paratyphoid A bacillus. Together with Hartoch-Schlossberger's medium and a normal bouillon agar, it makes the differential diagnosis in the typhoid group easy.

Heterotopic Epithelium in Ovaries.—Contrary to Sampson, Stubler attributes the heterotopic epithelial formations in the ovary to the peritoneum or surface of the ovary.

Hereditary Cancer Types.—Kaiser reports on a 'cancer family'. Seven out of nine members of one generation died from cancer. There was a noticeable predilection for the stomach and gallbladder among the descendants.

Results of Amputations.—Bohm reviews the results in amputations. Lisfranc's and Chopart's methods are a failure

unless there is enough skin to cover the stump easily. In all amputations every centimeter of bone is worth saving. Sauerbruch's prosthesis is good for quick grasping, although not for holding or carrying. Yet the number of persons using the method becomes smaller with every year. The muscle tunnels shrivel, get inflamed and smell badly.

Painful Points on the Thorax.—Contrary to Bing Tellgmann could produce pain by pressure over the heart region and below the borders of the lung. He, therefore, attributes the pain to superficial fibers of the intercostal nerves and not to the pleura.

Syphilis of the Nervous System.—Schultz reports on four officers infected with syphilis by the same girl in 1908. One of them had a syphilis of the brain with hemiplegia, another tabes and two died from a rapidly progressing general paralysis.

Treatment of Angiomas.—Moser had excellent results with Wyeth's injections of boiling water in hemangiomas.

Mortality After Seventy Years.—Roesle's statistics show an early and rapid increase in the mortality of old people during the war. The cities were more affected than the country.

Medizinische Klinik, Berlin

20 881 918 (June 29) 1924

- *Fibrous Mediastinopericarditis H. Pollitzer—p. 881
- Epithelial Growth in Ovary E. Vogt—p. 884
- Disturbances of Juvenile Bone Growth Caan—p. 886 Conc'n p. 924
- Periodicity of Peptic Ulcer A. Lechler—p. 889
- *Acute Myelosis in Infant J. Opitz—p. 891
- Paravertebral Dulness Windrath—p. 893
- *Roentgen-Ray Treatment of Neuralgia H. H. Matoni—p. 894
- Treatment and Cause of Glaucoma E. Weinberg—p. 897
- Recovery After Wound of Heart and Lungs E. Hum—p. 899
- Treatment of Leukorrhea A. Landeker—p. 900
- *Case of Copper Poisoning J. v. Petheo—p. 901
- Intravenous Injections of Thymol G. Krutzsch—p. 903
- Cancer and Its Treatment Strauss—p. 905 Conc'n p. 942

Paracardiac Aortic Stasis.—Pollitzer disregards the classic signs of chronic fibrous polyserositis, such as pulsus paradoxus, systolic retraction and diastolic protrusion of the chest wall. They are present also in other conditions, especially adhesion of the heart to the anterior wall. The main symptoms of the fully developed disease are universal edema with predilection for the lower eyelids and the muscles of the legs, which accounts for the frequently greater painfulness in comparison to edema of other origin. The violet cyanosis of the lower extremities in young persons is almost pathognomonic. There is slight icterus and a large but not pulsating liver. No positive venous pulsation is found and the examination of the heart region reveals, instead of the expected enlargement, a small, not palpably pulsating heart, with clear sounds resembling a pendulum rhythm but with preservation of the accentuation of the second sound. The chest is flat in front and drops off suddenly toward the axilla. The symptoms are caused by a fibrous fusion of the pericardium with surrounding tissues, which prevents a complete diastole. Although not theoretically indicated, the treatment may start with digitalis because it is difficult to tell how much the systolic force has suffered. The only help is Rehn's pericardiectomy (not a mere anterior cardiomyotomy). He believes that the affection starts in the centrum tendineum of the diaphragm which is the cross-road of the thoracic and abdominal lymphatic system.

Acute Myelosis in Infants.—Opitz describes a case of acute myelogenous leukemia in a three months infant.

Roentgen-Ray Treatment of Neuralgia.—Matoni had good results with roentgen-ray treatment of trigeminal neuralgia and of sciatica.

Treatment of Leukorrhea.—Landeker treats leukorrhea with short applications of ethyl chlorid spray on the cervix and vagina. He repeats the treatment six to eight times at two day intervals.

Case of Copper Poisoning.—Petheo's patient a boy 2½ years of age died with symptoms of hemorrhagic gastroenteritis. He had been treated three days previously for eczema of the head by application of copper sulphate dissolved in cream, prescribed by a quack.

20 919 956 (July 6) 1924

- *Suboccipital Puncture M Nonne—p 919
- Nonspecific Protein Preparations R Schmidt—p 922
- Menstrual Hemorrhagic Illness J Westgasser and K Cifis o—p 926
- Urine Tests in Gonorrhea I W Oelze—p 930
- Subacute Fever Conditions O Kurz—p 931
- Imitation of Paranoia A Kluge—p 935
- Affections of the Spleen K Mienzl—p 935
- Venesection with Latham's Apparatus R Unger—p 937
- *Surgery on Raised Limbs K Pichler—p 937
- Simultaneous Injection of Atropin and Pilocarpin S Bales—p 937
- Bold's Turbidity Reaction F Weyrauch—p 940

Suboccipital Puncture—Nonne observed one death from injury to a sclerotic abnormally situated cerebellar artery among his 310 suboccipital punctures. The subjective disturbances were much rarer and less pronounced than after lumbar puncture. It is valuable for diagnosis of blocked spinal canal and in treatment of meningitis.

Surgery on Elevated Extremities—Pichler had good results with Bier's simplest method of local anæsthesia. Elevation of the extremity is sufficient for small operations.

Munchener medizinische Wochenschrift, Munich

71 887 930 (July 4) 1924

- The Vegetative System in Pregnancy I Seitz—p 857
- *Blood Gases in Acetylene Anæsthesia R Schoen—p 89
- *Treatment of Morphin Addicts O Wuth—p 891
- Ambulatory Pneumothorax Treatment P Menck—p 894
- Nonspecific Protein Treatment R Schmidt—p 897
- *Lime Casts in Yellow Fever W H Hoffmann—p 898
- *Biologic Diagnosis of Pregnancy F Binz—p 899
- Mercuric Chlorid in Varicose Veins C Hempel—p 900
- Erythema After Bismuth Gohl and Voigt—p 904
- Treatment of Spendulitis F Lanpe—p 904
- Diabetes Mellitus T Umber—p 905
- Deaths from Influenza and Tuberculosis T Murer—p 907

Blood Gases in Acetylene Anæsthesia—Schoen determined the concentration of acetylene, oxygen and carbon dioxide in blood during and after the anæsthesia. The range of effective concentration of acetylene is broad—between 20 and 50 volume per cent. The oxidation processes are evidently reduced. Acidosis was observed from the beginning of the anæsthesia.

Treatment of Morphin Addicts—Wuth saw very little good effect from bromids and narcotics, including chloral, in treatment of morphin addicts. The antipyrin group is more advisable. Injection of cholin gave Klee and Grossmann promising results.

Lime Casts in Yellow Fever—Hoffmann found lime casts in the gravely degenerated kidneys in twenty-four out of twenty-eight necropsies of persons who died from yellow fever. He found them also in experimentally infected dogs but not in guinea-pigs. The changes resembled those after mercuric chlorid poisoning, and were so striking that they might serve for autopsy diagnosis.

Biologic Diagnosis of Pregnancy—Binz observed a case of precocious puberty in a girl, aged 2 with an ovarian tumor. Injections of fluid from this tumor into mice caused a marked enlargement of the uterus. A parovarian cystoma gave similar results, while other tumors were without any effect. Serum from pregnant women caused a peculiar enlargement of the transverse diameter of the uterus of mice when injected in eight daily doses of 0.5 cc each.

Wiener klinische Wochenschrift, Vienna

37 661 684 (July 3) 1924

- *Preventive Hydrophobia Vaccination R Kraus—p 661
- *Secondary Dysentery Strains B Busson and N Ogata—p 665
- *Regeneration of Spleen Schonbauer and Sternberg—p 667
- Cyclic Changes of Erythrocyte Count J Sahler—p 669
- Electrocoagulation in Anal Fistula W Goldschmidt—p 672
- Röntgenography of the Appendix A Czepa—p 673
- The Kidneys After Bismuth Treatment A Fischer—p 674
- Paratyphoid Endocarditis T Dervis—p 675
- Injuries of the Ear I Hofer Supplement pp 113

Preventive Hydrophobia Vaccination—Kraus attributes the ascending paralysis after preventive vaccination against hydrophobia to toxic substances in the brain used. The lowest incidence of paralysis is with Hogyes' dilution method and with the milder Pasteur classical method. The occurrence of the paralysis varies in different institutes between 1/300 and

1/43000. He suggests that institutes with a high rate of paralysis change their method and material.

Secondary Dysentery Strains—Busson and Ogata confirm the frequent loss of agglutinability and changes of fermentative properties in dysentery strains which begin to grow after a few days in a bouillon culture cleared by the action of bacteriophages. These strains are resistant to bacteriophages and resemble in this respect, too, the group described by Schmitz. Such a strain was isolated by Busson from the stool of a nurse infected by a patient with perfectly typical Shiga bacilli.

Regeneration of the Whole Spleen—Schonbauer and Sternberg extirpated the spleen in salamanders and other animals. The organ did not regenerate. Free autotransplants of parts of spleen in dogs grew to the omentum or mesentery but degenerated completely.

Zeitschrift für Geb und Gynakologie, Stuttgart

87 475 682 (June 28) 1924

- Maceration of Skin in Viable Child W Koerting—p 475
- *Tuberculosis and Pregnancy T Siebert—p 479
- Placenta Reflexa A Seitz—p 499
- *Anemia in Pregnancy A Alder—p 505
- Behavior of the Leukocytes During Pregnancy A Heyn—p 519
- Acute Hydranion S Goldschmidt—p 551
- Histologic Study of Ovarian Dermoids F Fichtl—p 561
- Idiosyncrasy to Scopolamin H Strube—p 572
- Extragenital Waves in Biology of Women Bokelmann and Rother—p 584
- *Bival Metabolism in Women L Kraul and G Halter—p 606
- Pharmacologic Research on the Uterus H Schultheiss—p 614
- Spirochetes in the Vagina Philipp—p 634
- Cause of Rupture of Follicle P Strissmann Jr—p 640

Tuberculosis and Pregnancy—Siebert reports from Opitz service the results of systematic interruption of the pregnancy by supravaginal amputation of the uterus and castration. The operation was done in the second to fourth month as a rule never later than the fifth month, and only on women who already had at least two children and were apparently doomed otherwise. Of the 26 women thus treated more than a year ago, 20 were improved at once, the outcome is not known in 2 cases. The 4 women who showed no improvement all died in from one to eleven months, 12 in the improved group seem to have recovered entirely and 8 have progressively improved except one who succumbed to a recurrence more than a year and a half later.

Anemia in Pregnancy—Alder points out that in all the cases of anemia suggesting the pernicious type, in pregnant women, of which he can learn, there was a history of chlorosis or other affection liable to injure the blood producing organs.

The Leukocytes During the Gestation Period—Heyn examined 44 healthy pregnant women before they had risen or eaten in the morning. The leukocytes ranged from 6,950 to 23,500 in the 23 primiparas and from 7,050 to 16,550 in the multiparas during the last two months of the pregnancy. In another group of 25 primiparas and 13 multiparas who had been out of bed for two hours doing light housework, the averages were 12,210 and 11,460. The eosinophils and lymphocytes scarcely reached the lowest range of normal figures, but the shifting to the left of the Arneth formula was pronounced in every month of the pregnancy. It can be relied on he says, as a sign of probable pregnancy. When the shifting to the left is especially notable, the woman should be spared over exertion. He presents these physiologic hemograms to serve as a basis for diagnosis and prognosis in pathologic conditions.

Idiosyncrasy to Scopolamin—Strube relates that Dioscorides described, three centuries before Christ, how the physicians of Alexandria gave their patients mandragora to reduce the pain from operations with hot iron or knife. The mandragora is closely allied to scopolamin and the procedure was thus like the scopolamin-morphin of "twilight sleep." He reports two cases of severe toxic action from the latter in two women and grave manifestations of idiosyncrasy in a physician who had injected 0.0006 gm of scopolamin by mistake for a sedative to relieve his asthma. On testing the blood of these three persons, Strube found extreme alkalinity. Instead of the normal 4 to 7 drops 14, 11 and 17 drops of the reagent were required to neutralize 10 cc of blood. He warns therefore that before applying scopolamin morphin a

test injection of 0.0002 gm of scopolamin should be given. If oligopnea and xanthopsia develop in five minutes, no further scopolamin should be allowed.

Biologic Waves in Women—The data presented confirm the cyclical variations in metabolism in women. There seems to be a physiologic relative acidosis preceding the menses. After the menopause, the biologic waves seem to settle to a regular level.

The Basal Metabolism in Relation to the Female Genital Functions—Kraul and Halter noted an increase in the basal metabolism a day or two after roentgen-ray exposure, and the increase was known to persist for six weeks. Roentgen castration and removal of the uterus reduce the basal metabolism, but it is raised with myomas and metropathies.

Zentralblatt für Chirurgie, Leipzig

51 1335 1382 (June 21) 1924

Fatigue Hypotonia and Gastric Ulcer F. J. Kaiser—p. 1336
Gastric Myomas N. Kleiber—p. 1341
Soft Parts in Finger Amputations W. Porzelt—p. 1343
Morphology of the Clavicle in Man F. Steccard—p. 1345
Two Surgeons Operating Simultaneously on Same Patient L. Kirchmayr—p. 1346

Fatigue Hypotonia and Fatigue Atony as the Cause of Gastric and Duodenal Ulcer—Kaiser points out that recent theories in regard to the origin of gastric ulcer do not explain the first superficial defect in the gastric mucosa. Once the first defect is present the further evolution is obvious. He holds that fatigue hypotonia is the most frequent but not the only cause of gastric ulcers. Stretching of the vessels from various causes (especially in persons in whom the blood supply is barely adequate) narrows the lumen and reduces to a dangerous level the blood supply to the gastric mucosa. The necrotic mucosa is attacked by the gastric juices, whence we have the beginning of an ulcer.

51 1383 1446 (June 28) 1924

Removal of Foreign Bodies from the Esophagus by Way of the Stomach V. Hücker—p. 1384
Old Fractures of Neck of Femur J. Heine—p. 1390
Roentgen Irradiation in Inflammation F. Schuck—p. 1397
Hernia on the Semilunar Line A. Drescher—p. 1400
Plastic Herniotomy V. Gussew—p. 1402
Construction of Cosmetic Umbilicus in Umbilical Hernia L. Kirchmayr—p. 1403
Extreme Hyperglycemia Early in Experimental Necrosis of the Pancreas Calzavara—p. 1405
*Postoperative Retention of Urine Boeminghaus—p. 1406

Postoperative Retention of Urine in Children—Boeminghaus reports a case in a boy, aged 7, following an operation on the scrotum. The ischuria lasted four days. He hesitated to use remedies employed in adults, such as intravenous injection of hexamethylenamin or catheterization and recalled that children often urinate involuntarily during anesthesia. He accordingly anesthetized with ethyl chlorid with the result that the bladder was relieved. The flow of urine ceased however before the bladder was emptied, and only by compression was the bladder completely evacuated. The same procedure had to be repeated the next two days, after which the boy could urinate voluntarily.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

1 2825 2964 (June 21) 1924

*Cod Liver Oil in Local Treatment of Tuberculous Abscess Huët—p. 2826
Influence of pH on Action of Amylase J. T. Groll—p. 2832
Corrosion of Esophagus and Hematemesis A. de Groodt—p. 2838
Development of Sinus Duræ Matris in Man C. van Gelderen—p. 2848
*The Kidneys and Beta Oxidation I. Snapper and A. Grunbaum—p. 2856
Fistula Between Stomach and Colon M. J. F. van Oppen—p. 2862
*Varieties of *Spirochaeta Pallida* A. Klarenbeek—p. 2865
Appeal for More Careful Statistics on Excess of Boy Births Sanders—p. 2913

Cod Liver Oil in Local Treatment of Tuberculous Abscesses—Huët injected directly into the cold abscess or the fistula cod liver oil containing 10 per cent of iodoform. In the nine cold abscess cases all were improved and about 50 per cent speedily healed. In the twenty-two fistula cases, three did not seem to be modified and three continued a progressive course but all the others showed more or less improvement.

Bleeding from Corrosion in Esophagus—De Groodt remarks that patches of corrosion in the esophagus have generally been attributed to changes after death but in eighteen cases he has recently been studying they had evidently preceded death. There was a history of supposed gastric hemorrhages in most of these cases but he is convinced that the corrosions were responsible for the bleeding. The stomach seemed to be intact but the liver was always more or less pathologic. Cirrhosis and congestion of the liver derange the portal circulation and this in turn modifies the circulation in the esophagus vessels, with the terminal 'hematemesis'. It may be possible to ward off death from this cause by improving conditions in the local and portal circulation and thus arresting the hemorrhage. Von Eiselsberg has reported three and Pringle seven cases in which this proved possible and the patients were saved. The local hyperemia and the entrance of gastric juice, which is probably held stationary by spasm of the cardia, imply explain the corrosion and the resulting 'hematemesis'.

Elimination of Fat Acids by the Kidneys—Snapper and Grunbaum present evidence to sustain their theory that the kidneys play an important part in beta oxidation, by which the fat acids are transformed in the course of their metabolism.

Varieties of *Spirochaeta Pallida*—Klarenbeek declares that Levaditi and Marie's 'neurotropic virus' resembles *Spirochaeta cuniculi* so closely that it is safer, at present, to regard them as identical and a variety of *Spirochaeta pallida*.

1 2965 3088 (June 28) 1924

Albuminuria and Functional Kidney Tests J. W. Koning—p. 2966
Various Techniques for Cerebral Section. Noë—p. 2974
Structure of Cell Protoplasm H. C. Voorhoeve—p. 2979
Formation of Adipocere in Local Cemetery Demmers—p. 2984
*Abnormal Cystin Metabolism in Children G. O. E. Lignac—p. 2987
Hereditary Anomaly in the Cornea Van Went and Wibaut—p. 2996
Present Status of Knowledge of Cystin Metabolism Lignac—p. 2998
Carrel's Research on Tissues Growing Outside of Organism M. A. van Herwerden—p. 3004
The Beccari Fermentation Chamber for Cabbage Van Loghem—p. 3033
Observation Department in the Care of Nervous and Mental Diseases W. Beyerman and J. L. van Lier—p. 3037

Cystin Deposits in Various Organs—Necropsy of two boys, 2 and 3 years old with severe rickets revealed cystin crystals scattered through the spleen, kidneys, intestines, choroid plexuses, liver and mesenteric glands. In both these cases, as also in Kaufmann's in a male infant, the physical development from birth had been substandard, but the children were not mentally backward. All succumbed with the clinical picture of atrophy. Photomicrograms are reproduced.

Ugeskrift for Læger, Copenhagen

86 511 526 (July 3) 1924

A Neurologist's Impressions of America K. H. Krabbe—p. 511
Treatment of Duodenal Ulcer Sir Berkeley Moynihan—p. 513
*Vital Statistics in Denmark H. J. Hansen—p. 521

Vital Statistics in Denmark—Hansen's charts show a decided downward trend of all causes of death since 1890 except from cancer. In 1890, deaths from cancer formed 6.6 per cent of the total mortality, but in 1920-1922 they represented 12 per cent. The number of cases of delirium tremens treated in the hospitals averaged 43,100 from 1890 to 1911 without much fluctuation, but since 1918, the number of cases has leapt close to 0.1, 10,000.

86 527 542 (July 10) 1924

*The Anoxemia in Pneumonia C. Lundsgaard—p. 527

Oxygen Starvation in Pneumonia—Lundsgaard presents evidence to demonstrate that the anoxemia of pneumonia patients surpasses that of persons with a heart defect reducing function by a third, and it also surpasses that of persons in the rarefied air of high altitudes. The oxygen content of the arterial blood as determined in fifty patients with croupous pneumonia and fourteen with influenza pneumonia, is compared with the oxygen content in a number of normal persons at an altitude of about 12,000 feet. The condition in both groups is very similar. Pneumonia patients thus have to combat the infection under conditions which reduce the resisting powers materially.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL 83, No 8

CHICAGO, ILLINOIS

AUGUST 23, 1924

THE MODERN EXAMINATION OF A PATIENT WITH CHRONIC INDIGESTION *

FRANKLIN W. WHITE, M.D.
BOSTON

The examination of the patient is a search for the truth. We need accurate methods, good logic, and good judgment in conclusions, with no undue stress on any fact. There is a complaint that laboratory methods tend to make a less keen clinician. This is not necessary. The new facts enlarge his scope and should help him to make more accurate diagnoses.

Our examination may be divided into (1) what we always do, (2) what we usually do, and (3) what we occasionally do. Since we can rarely use all our methods, good judgment is needed in selecting the tests to use in an individual case. We do not want to miss anything important and we do not want to waste time. Mistakes may sometimes be made, and a test omitted which is the key to the diagnosis, i. e., a Wassermann test, a roentgenogram of the gallbladder, a pancreatic test, or an examination of the feces for blood.

We develop a certain routine, which is complete without being too elaborate, and add special features to it as needed. In this way, with all our examinations, we spread a net through which few diseases escape. An enthusiast may take an "occasional" test, such as biliary drainage, or stool tests for blood, and use it "always."

Some tests are easy for the family practitioner, such as the taking of the history, the physical examination, the examination of the feces and perhaps the use of the stomach tube. Other tests, such as the roentgen-ray examination, or tests of liver or pancreatic function, usually mean a visit to a special or hospital clinic. There is always a strong effort to simplify every test, so that as many as possible may be freely used by the general practitioner. The routine is as follows:

What we always do

- Take a careful history. This is usually more complete and systematic if a form sheet is used.¹
- Make a general physical examination (including throat, teeth, skin, lungs, heart, blood pressure, abdomen, reflexes, urine, hemoglobin, etc.).
- Analyze the stomach contents, with the patient fasting, or after a test breakfast, or both.

What we usually do

- A roentgen-ray examination of the gallbladder region, and after a barium meal.
- Examine feces on ordinary or meat-free diet.
- A Wassermann reaction.

What we occasionally do

- A barium enema.
- A biliary drainage.
- Tests of liver function.
- Tests of pancreatic function.

The exploratory operation is somewhat neglected. This is a tribute to our accuracy. If nothing is found, the surgeon hesitates to open the abdomen. This hesitation may be overdone, especially in the difficult cases, such as early or nonobstructive cancer, some gallbladders and some pancreatic cases.

New methods constantly appear and have to be sifted out with much time and trouble. This is laborious, but it is the price of progress. It is the part of the young workers to carry out these investigations. It is the part of the experienced clinicians to stimulate and supervise this work, and, finally, to sum up the results in a critical spirit and see whether the new method is worth its salt. We want no new methods unless they are useful. We want no elaborate examinations unless we are sure of their value.

HISTORY AND PHYSICAL EXAMINATION

In spite of the importance of this examination, we can mention only a few points. Some diagnoses are habitually easy, others are usually hard. For example, it is easy to locate disease in the esophagus, to diagnose duodenal ulcer or ptosis, or colitis, or intestinal obstruction. It is hard to find an early or nonobstructive cancer, or pancreatic disease, or a latent pathologic gallbladder. In other words, some types of cases need much more intense study than others, to avoid mistakes. We like to simplify the diagnosis, but often a double lesion is present, such as a pathologic gallbladder and a pathologic appendix, or an ulcer and a diseased appendix, or multiple ulcers. Irregularity of symptoms is often due to adhesions involving other organs, e. g., the gallbladder or appendix.

The differentiation of ulcer and cancer of the stomach is usually easy, but may sometimes be hard or impossible. Experienced clinicians everywhere agree that cancer of the stomach is almost always primary and rather rarely the sequel of a chronic ulcer, probably not more than 5 per cent of gastric ulcers changing to cancer. This makes us more comfortable about diagnosing ulcer in patients who have had years of digestive trouble.

Obstinate resistance to treatment makes one suspect an organic lesion. We make the diagnosis of "nervous hyperacidity" much less often now in chronic, serious cases. We usually expect to find an ulcer, a pathologic appendix or a pathologic gallbladder behind the illness. Rarely a persistent hyperacidity and other digestive symptoms are due to a stone in the kidney or ureter, which is otherwise latent. We must not confuse high secretion and the syndrome "hyperacidity" (hunger

* Chairman's address read before the Section on Gastro-Enterology and Proctology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

¹ Such as the author's form sheet in Nelson's Loose Leaf Medicine 5-124.

pain or distress with acid eructation and food or soda relief) We find high secretion in young, strong persons We find "hyperacidity" in sick people, it is chiefly a motor phenomenon

Factors outside the digestive tract should always be kept in mind When symptoms of indigestion depend closely on exercise, we should think of the heart Here the use of digitalis is a valuable therapeutic test Every year we see cases of well developed tuberculosis of the lungs which have been masked by symptoms of indigestion and overlooked The achylia cases form a most interesting group in which every other examination, including that of the blood, is negative, and which a year or two later show pernicious anemia Another group that is constantly overlooked is that of the late syphilitic cases, whose only symptoms are of indigestion Here the early history and the blood or spinal Wassermann test solve the problem Migraine vomiting is often called "stomach trouble" by the patient The history is usually a sure guide

Chronic pancreatic disease is almost always obscure and many wrong diagnoses are made Jaundice is usually not an early symptom We want all the laboratory help possible, if chronic pancreatic disease is suspected, the physician should always examine the duodenal contents as well as the stools, for enzymes, blood, etc

We should be slow in diagnosing chronic appendicitis as a cause of symptoms of indigestion unless there is a good history of previous acute or recurrent attacks and no other cause is found This diagnosis is much too frequently made Fully one half of the patients whose appendix is taken out for chronic indigestion (not acute attacks) come back with the story that they have found no relief from operation A careful history taking would have saved many of these patients a needless operation Many have an ulcer or gallbladder disease More still have a purely functional, not organic, indigestion

This is in direct contrast to gallbladder disease, in which many cases are overlooked, and the diagnosis not made often enough Fully half of the patients have no local symptoms, no colics, no right-sided pain, soreness or tenderness, no jaundice They simply complain of vague indigestion, gas, distress, heartburn, nausea They masquerade as having "intestinal indigestion" and "gastric neurosis," and we are often disagreeably surprised later to find that they have had a successful operation and that we have overlooked another pathologic gallbladder

We like to have one test back up another, and we do not take a deformity of the duodenum so seriously if the history does not even suggest a duodenal ulcer On the other hand, we have to accept the roentgen-ray evidence of a clear, undoubted gallstone or a definite gastric ulcer or an hour-glass stomach, whether the history is characteristic or not

ANALYSIS OF GASTRIC CONTENTS

It will be a comfort to the practitioner to know that there is a strong and growing tendency to give up fractional examinations of stomach contents in routine work and to go back to the single one-hour test

In many of our leading clinics, fractional tests have been given up, except for the group of low acid cases, as not being worth the time they take, because they are less easy for the patient and because of certain definite objections, the most important being that the small fractions taken out are not representative of the stom-

ach contents as a whole, because the latter are not well mixed

Pawlow and Cannon and others have pointed out that the stomach is a poor mixing machine, and this has been recently emphasized by Dr F D Gorham² of St Louis and confirmed in a series of 500 analyses that I³ performed If one fraction of stomach contents gives an acidity of 15, another fraction, taken at the same time, 30, and another, 50, so-called "fractional curves of secretion" lose their interest

Motor changes (which, of course, are much more important than secretion) are readily found in other ways the twelve hour motor test or six hour barium meal Pathologic products, such as mucus, pus, blood, epithelium and bacteria, are easily found with the single test, or in the fasting contents

We must remember that secretory figures vary much in the same patient from day to day because there are so many factors affecting the secretion, the general condition, mental and physical strains, mucus, duodenal regurgitation, the psychic effect of the intubation, etc, and reexamination is very important We must not lay too much stress on one analysis, whether single or fractional

A fractional test takes about one and one-half or two hours If even a small part of this time were spent in reexaminations of the same patient, taking only a few minutes each time, on different days, probably much more of value would be obtained

The test of the value of this and every clinical method is the question Does it give enough added information to warrant its use? We may easily spend time on a complicated test, and plot curves which look scientific and slight more important things, such as careful history taking and a diagnostic study of symptoms If thousands of patients are to sit for hours with tubes in their mouths, we must have something important to show for all this valuable time spent, something which cannot be obtained from the fasting contents and single meal

We may combine the simplicity of the single tube test with the advantage of the fractional method in low acid cases, by passing the Rehfuess tube at the end of three quarters of an hour to one hour If plenty of gastric secretion is found, the stomach may be emptied and the test closed If secretion is low or absent, the tube is left in, and fractions are taken till the stomach is empty In this way, normal secretion cases are quickly disposed of, while low secretion cases are thoroughly followed up

Only gross changes in secretion have any medical value We are interested to know whether secretion is high, low or absent, not in mathematical details A knowledge of secretion is often of more value in treatment than in diagnosis Unfortunately for the practitioner, examinations of the stomach contents are not really easy, like examinations of the urine The family physician often thinks they are too much trouble and starts his treatment without knowing whether gastric secretion is high, low or absent Such therapeutic procedures are blind work

In the case of ferments, for example, it would be ridiculous, if it were not so sad, to think of the enormous economic waste, the careful preparation of animal and vegetable ferments, the bottling, the advertising, the selling, the cost to the patient of something which

² Gorham F D Variations of Acid Concentration in Different Portions of Gastric Chyme and Its Relation to Clinical Methods of Gastric Analysis Arch Int Med 27: 434 (April) 1921
³ White F W Simultaneous Variation in Acidity of Different Portions of Gastric Contents J A M A 79: 1499 (Oct. 28) 1922

so frequently is entirely wasted, something which he already has in abundance and of which the extra supply is not worth a cent to him. How quickly the use of ferments would drop if the family physicians tested their patients' stomachs and gave these preparations in only the small percentage of cases in which they are actually needed.

A glance at the formulas of the manufacturers or at the prescriptions of physicians, shows that common facts in the physiology of digestion are disregarded and that ferments are combined and given to patients without much care or common sense. Most of the ferment formulas are harmless, but could not possibly help digestion.

Our present titration methods for finding the acidity of the stomach contents do not meet modern scientific standards. We may have to change them entirely and find out how much ionized acid is present. This is the truly active acid, the one on which the activity of the pepsin entirely depends. Hydrogen ion concentration methods may change our gastric analysis entirely, just as they have changed nearly all other chemical analysis. No one, for example, would think of using anything but p_H methods in the pathologic laboratory for finding the reaction of mediums for bacterial culture. Fortunately for the old titration methods, I⁴ have found that, in the stomach contents, at a stated time (one hour) after a uniform test breakfast given on an empty stomach, the buffer bodies are small in amount and fairly constant, and the more accurate p_H analysis agrees well with the old titration methods in most cases.

It is important in gastric analysis to use a stable, uniform test meal. "A slice and a half of bread" may mean fresh bread, dry bread, well baked or poorly baked bread, white, graham, whole wheat or rye bread. A simple meal, such as a shredded wheat biscuit or six arrowroot crackers (National Biscuit Company) is surely much more definite and uniform.

BILE DRAINAGE

Bile drainage is a new and very interesting method of examination. Dr. Lyon makes a strong plea for an early diagnosis of the pathologic gallbladder by a direct method at a time when the history and physical examination are doubtful and the roentgen ray shows no pathologic changes. I am convinced that the method has some value in diagnosis, but the degree of value is not determined yet.

Some of the early interest and enthusiasm for biliary drainage has cooled as the limitations of the method are recognized and an increasing number of cases are checked by operation. The method has not realized all its original claims (few new methods do), and the question is asked in many clinics and laboratories whether or not the method is worth the time it takes.

It is difficult to estimate its total value at this time, although it has been in use for several years, and much has been written about it. There is much contradictory evidence at present, both clinical and experimental. The clinical papers are written almost entirely by those who have found the method useful in their own experience. Other trained men have tried it, have been disappointed and have given it up and their names do not appear in the literature, but I have found there are many such from personal interviews. Unfortunately, there are some men who have criticized the method freely without giving it a fair trial or any trial at all.

The physiology on which the method rests has been questioned. While there is no doubt about the relaxation of the common duct sphincter by magnesium sulphate, or the flow of bile after its use, there is much doubt about the contraction and degree of emptying of the gallbladder. It is probable that most of the bile obtained in a drainage comes direct from the liver and larger bile passages.

An estimate of the value of the method in diagnosis is formed from two classes of cases, a smaller group, of patients operated on, with a definite check on the method, and a far larger group of patients not operated on, in which we have no definite check. In the first group, the method has shown up well in diagnosis, but, of course, these are, as a rule, the more serious or well marked cases.

The second group is quite different. In these milder cases, suspected of pathologic gallbladder, the diagnostic details of color change, cells, crystals and cultures may appear conclusive to one man and not to another. When this second group is very large in a reported series, say 80 per cent, and many are so-called "masked infections," with no definite symptoms or signs except the evidence from bile drainage, we are on uncertain ground.

The method is somewhat elaborate and time consuming with its intubation, lavage, aspiration, microscopy, cultures, repetition of the drainage, and often the use of the roentgen ray. There is difficulty in localizing the disease in the bile passages. Many of the cells seen are evidently from the duodenum. A study of sediments from opened pathologic gallbladders has proved disappointing for diagnosis. There is a minority of distinctive cultures and an abundance of colon bacilli and other bacteria of doubtful significance. The variety of opinions about the importance of color change, crystals and cultures shows some uncertainty in the method at present.

On the other hand, biliary drainage has given us a definitely better diagnosis in a limited number of cases. (a) The acute inflammatory cases, cholecystitis and cholangitis and exacerbations of chronic cholecystitis quite often show an abnormal bile, thickened or darkened, with bile stained epithelium, pus cells and mucus, and some distinctive cultures of the pus organisms or the colon bacillus. (b) No dark or B bile is usually found with a blocked cystic duct, a gallbladder full of stones, or one that does not empty. (c) No bile is found in common duct obstruction (stones, cancer, etc.). (d) An excess of crystals is occasionally found in gallstone cases.

Clear bile with cultures usually sterile is found in normal persons, gallstone cases and some cases of chronic cholecystitis.

Whether or not the method gives us an adequate diagnostic return for the time spent will be decided, no doubt, in the next few years. My views of its present status are given in a recent paper.⁵

TESTS OF LIVER FUNCTION

The liver is our largest gland. It has many important functions in sugar, fat, and protein metabolism, destroying poisons, taking care of old red blood cells, and the excretion of bile. Many functional tests of the liver have been used, for sugar tolerance, nitrogen partition, lipase in the blood, the excretion of dyes, etc. Some tests, such as Widal's hemoclastic shock of 1921, have soon been found wanting and discarded.

⁴ White F W. Unpublished data.

⁵ White F W. Modern Diagnosis of Diseases of Gallbladder. *M Clin N Am* 7: 909 (Nov.) 1923.

I will speak of only one recent method the phenoltetrachlorophthalein test, a permeability test something like the phenolsulphonephthalein test of the kidney. This was devised by Rowntree⁶ about ten years ago and has been much used and improved of late. The dye was first tested for in the feces, then in the duodenal contents, by McNeil⁷ in 1916, and now the test is made to see how rapidly the liver removes the dye from the blood.⁸

The technic is not difficult. A given dose of the dye per body weight is injected into a vein and the rapidity of its removal from the blood is judged by a color test of the blood serum at intervals for several hours. The dye is irritating, so it must be diluted and must not be spilled in the subcutaneous tissue.

The older test in the duodenal contents leaves us in the lurch when there is common duct obstruction by stone, stricture or growth, namely, in just the type of case in which it is so important to know the amount of damage to the liver cells, in order to estimate the liability to shock after operation. The Rosenthal test of the blood is far better in this respect, since it is not interfered with by common duct obstruction.

The most serious difficulty in any liver function test is the large margin of safety in the liver. This is very valuable to the individual, but hard for the test. It will be remembered that McMaster and Rous⁹ tied nine-tenths of the bile ducts before secretion lessened, and in phosphorus poisoning experiments only very late positive results were found by Whipple¹⁰ with the phenoltetrachlorophthalein test in the feces, after most of the liver was damaged. The objection was found in the earlier tests that all methods failed to show slight changes in the liver and that positive tests were chiefly obtained in cases of extensive disease of the liver, in which the clinical evidence was often sufficient (cancer chronic hepatitis). In most serious cases that I myself have tested, it has usually been possible to predict the test, so that it has been of less help than we expected.

On the other hand, it is the most promising liver function test we have at present, and there is a reasonable hope that with further experience it will prove a valuable guide to the extent of liver damage in less severe types of liver disease, such as infectious jaundice, gallbladder infections with liver involvement, and post arsenamin cases. New and important work is now being done.

FUNCTIONAL TESTS OF THE PANCREAS

Despite the fact that the pancreas is by far the most important of the digestive glands, few pancreatic tests are made in general practice, and, if used at all, simple methods have been employed, which give only approximate results. The excuse is that pancreatic disease is somewhat rare, that the compensatory action of the pancreas interferes with such tests, that there is the necessity of getting duodenal contents, and, lastly, that there are technical difficulties in the making of accurate tests. The early methods were rather rough, because no attention was paid to the physical chemistry of the duodenal contents and its effect on enzymes, which makes it somewhat difficult to interpret the results obtained.

Enzymes are very delicate and the tests must be very carefully arranged, otherwise they are variable or useless. Unfortunately, a good test is a rather complicated affair and not a practitioner's method, like tests of the urine or blood. For the most accurate tests, a laboratory technician is needed, much as in the case of a Wassermann test. With duodenal intubation (and perhaps the use of a fluoroscope) and technical analyses they are limited at present largely to hospital use.

If it proves possible to simplify the tests and yet leave them sufficiently accurate for clinical purposes it will greatly extend their use in the diagnosis of diseases of the pancreas itself and will probably discover many cases of chronic indigestion, of gallbladder disease and of diabetes which show interesting and important changes in pancreatic function. We should not examine the urine for albumin nearly so often if we had to do a Kjeldahl test instead of a heat or nitric acid test. The first is more accurate, the latter will do for clinical work.

The physical chemistry of enzyme action is very important; enzymes are markedly affected by the acidity or alkalinity (p_H) of the medium in which they act. This reaction is kept constant largely by the amount and efficiency of the buffer substances present (those bodies which resist changes in the p_H value on the addition of acid or alkali).

McClure¹¹ of Boston has taken the work of the physical chemist on enzymes and developed methods that are much freer from criticism as far as physical chemistry is concerned, than most or all of the methods used before. The methods are somewhat elaborate, perhaps they have to be. Time will tell. Their complexity has proved a bar to their general use thus far. Simpler methods are very desirable.

The most striking results of recent work are that 1. Pancreatic ferments are low in chronic pancreatitis and cancer of the head of the pancreas (though they may be normal in cancer of the pancreas when the head is not involved). 2. The ferments are rather low and often dissociated in acute pancreatitis, also in obstruction of the pancreatic duct by stone or sclerosis. 3. Ferment tests have real value in obstructive jaundice in localizing the lesion and in differentiation of malignant and benign lesions, e. g., in cancer of the pancreas head enzymes are low and in stone in the common duct they are normal.

Careful, even elaborate methods of testing the duodenal contents for ferments are worth while, because examination of the stools may give no clear sign of pancreatic deficiency, especially if bile is absent from the bowel. Also, bacterial enzymes in the bowel may mask the lack of pancreatic enzymes.

In comparing the results in McClure's cases with some older series, such as those of Crohn¹² or myself¹³ it is seen that, in general, the results are very similar in the older cases, though probably less accurate and definite in the individual case because the methods are less accurate. It is important to remember three things:

1. If in doubt about pancreatic function, one should test the duodenal contents.

2. We now have good tests of pancreatic function, which are both accurate and diagnostic.

3. There is a hope that we may be able to simplify them.

6 Rowntree, Hurwitz and Bloomfield. *Bull. Johns Hopkins Hosp.* 24: 327, 1913.

7 McNeil, H. L. *J. Lab. & Clin. Med.* 1: 822 (Aug.) 1916.

8 Rosenthal, S. M. *New Method of Testing Liver Function with Phenoltetrachlorophthalein*. *J. A. M. A.* 79: 2151 (Dec. 23) 1922.

9 McMaster, P. D. and Rous, Peyton. *J. Exper. Med.* 33: 731 (June) 1921.

10 Whipple. *Bull. Johns Hopkins Hosp.* 24: 357, 1913.

11 McClure, C. W., Wetmore, A. S. and Reynolds, L. *New Methods for Estimating Enzymic Activities of Duodenal Contents of Normal Man*. *Arch. Int. Med.* 27: 706 (June) 1921.

12 Crohn, Am. J. M. Sc. 145: 393, 1913.

13 White, F. W. *Tr. A. Am. Phys.* 1915.

THE ROENTGEN-RAY EXAMINATION

We all recognize the vast importance of the roentgen-ray examination. It is essential to accurate diagnosis. No other single method compares with it for the discovery of gross lesions in the abdomen. This fact may make us slight other methods of examination.

There is a recent tendency to study digestive cases less carefully, to take a less careful history, and make a less thorough physical examination, to omit tube tests and make no examination of the feces, but to send the patient at once to the roentgenologist and accept his report as final. This is very undesirable, because while the roentgen ray will discover gross lesions in the abdomen, it will overlook most of the functional changes, which make up the majority of digestive troubles. A roentgen-ray report of "no pathologic changes" in a case of indigestion does not mean that the patient is well. He may have achylia, hyperacidity, chronic gastritis, colitis, or even early or nonobstructive cancer of the fundus or posterior wall of the stomach, colon or the mesenteric or retroperitoneal glands, or pancreatic disease, or, often enough, gallstones, nephritis or anemia. It is obvious that we must not neglect our general examination merely because the roentgen ray is so remarkable.

Whenever there is a conflict between the clinical findings and the roentgen-ray report, the case needs careful study, as either method may be wrong. It is valuable to check up one method of examination by another, the roentgen ray by the tube test, or examination of the feces for blood. In this way, serious mistakes are avoided. One should look out for the case with a negative roentgen-ray report and constant blood in the stools.

On the other hand, there is a considerable number of cases in which the diagnosis could not be made without the roentgen ray, such as diverticula of the esophagus, stomach or bowel, diaphragmatic hernia of the stomach or bowel, hour-glass stomach, foreign bodies, some latent cancers and gallstones, benign tumors, and adhesions of the stomach and bowel. It also gives us unique information about peristalsis, tone, spasm, and the emptying of the digestive tract and about the condition of postoperative openings.

Ulcer—Ulcer of the stomach and duodenum is discovered and located with an accuracy found in no other clinical method, but even here we want the history and roentgen-ray examination to fit together. We have already suspected three fourths of the ulcers which the roentgen ray shows and we are very suspicious of slight deformities of the duodenum if the history does not agree with duodenal ulcer.

I have a suspicion that we are diagnosing too many duodenal ulcers in cases in which the patient has a definite "hyperacidity" syndrome, the roentgen-ray examination shows deformity of the duodenum, and a reexamination after the use of atropin gives the same deformity. Atropin does not always relax spasm, even in large doses, and occasionally a duodenal spasm is called ulcer. The patient is not operated on, but is cured by the usual "ulcer" treatment, and we have no check on the diagnosis.

Cancer—The diagnosis of early cancer by the roentgen-ray has been very disappointing. The roentgen-ray reports are mostly of the late cases. There are two reasons for this, the first being the limitations of the method. The early anatomic changes, like the symptoms and other signs, are hard to recognize, the earlier the cancer, the less clear the evidence. Early cancer

of the esophagus may be missed or called spasm. This is a serious mistake, the "spasm" may be an early sign of the cancer. In the stomach, an early cancer in the fundus or posterior wall may not be found. The fundus fills poorly, and the posterior wall is not seen in profile. In the colon, it is easy to miss a nonobstructive lesion. The imperfectly filled colon at the end of twenty-four hours is a great source of error. The routine barium meal without an enema is often not enough for diagnosis. The second reason for failure to diagnose early cancer is the scarcity or lack of early symptoms, and the long delay in getting the patient to his first roentgen-ray examination. This is especially true in nonobstructive cancer. There is delay all along the line. The patient feels quite well at first, does not take his slight indigestion seriously, and does not see his physician for a month or two. The physician thinks that the patient looks quite well, and the symptoms are mild, another month or two may go by before he is sent to the roentgenologist, and the first roentgen-ray examination shows a lesion that is no longer early. We may not be able to change our methods of examination at once, but we can at least have patients of cancer age examined more promptly.

Ptois—The roentgen-ray examination tells us the exact position of the abdominal organs. It is responsible for a multitude of diagnoses of ptois of the stomach and bowel and is partly responsible for an enormous amount of treatment by diets, exercises and belts. It is interesting to find that Moody, Van Nuys and Chamberlain¹⁴ have shown that a low position of these organs is very common in healthy, vigorous young adults who are entirely free from symptoms of indigestion. The average position of the greater curvature of the stomach was 1 inch below the interiliac line (navel) in men and 2 inches below in women, with extremes of 6 inches below in men and 7 inches below in women, with the position of the colon correspondingly low. It is obvious that we should not make so many diagnoses of gastro-intestinal ptois and that the improvement that comes after resting, feeding and exercising weak persons is due to an improvement of their general condition and not to change in position of the stomach and colon.

Diseases of Gallbladder—In disease of the gallbladder, most roentgen-ray signs are caused by gross anatomic changes and appear only in the late stages of the disease, while the roentgen-ray report is often negative in the milder, earlier cases before adhesions, thickening of the gallbladder, or stones have developed. In spite of all "gallbladder statistics," the clinical findings are the best guide in a large proportion of cases of gallbladder disease at the present time.

I have always been an enthusiast in roentgen-ray examination of the gallbladder and have watched the development of the technic with the greatest interest, as well as the finding of direct signs (stones, visible gallbladder) and indirect signs (adhesions, pressure deformities in duodenum, stomach or colon, spasm of the antrum). I have watched the positive findings in operations on pathologic gallbladders (not stones only) increase from 5 or 10 per cent up to 50, 70 or even 90 per cent with improvement in the technic. It is needless to say that these high positive results are obtained only with the best possible technic, the greatest care, interest, skill, time and expense, they are not found in careless or routine work.

¹⁴ Moody R O, Van Nuys R G and Chamberlain, W E. Position of Stomach, Liver and Colon. Results of Roentgenologic Study in Six Hundred Healthy Adults, J A M A 81 1924 (Dec 8) 1923

In order to evaluate statistics properly, we must distinguish between (a) all patients examined and (b) all patients operated on. What percentage of pathologic gallbladders are found or missed in all patients examined? No one knows. We have no statistics. What percentage are found in the patients operated on? For stones, the figures are from 10 to 50 per cent, or a little more, depending on the technic, and for pathologic gallbladders from 40 or 50 per cent up to even 80 or 90 per cent, as I have said, with the most perfect technic and conditions. The common fallacy is unconsciously to apply these high percentages of positive findings to cases of gallbladder disease as a whole and to forget that they apply only to the patients operated on, namely, the latest, most serious, most definite group with the most positive evidence of all kinds. This is said not to minimize the value of modern gallbladder work, but to evaluate the statistics properly.

The new phenoltetrabromphthalein test, just introduced by Graham and Cole¹ into gallbladder roentgenology, is very interesting. The salt is injected into a vein and is excreted almost entirely into the bile, and helps the gallbladder to cast a shadow on the roentgen-ray plate. I have seen some remarkable results in a few individual cases examined by Drs. Percy Davidson and P. F. Butler at the Boston City Hospital. An invisible gallbladder, or even a nest of stones, becomes clearly defined, and then fades again as the salt reaches the gallbladder and later disappears from it. It is a method of great promise.

322 Marlboro Street

THE RATE OF PROGRESS OF FOOD RESIDUES THROUGH THE BOWEL*

WALTER C. ALVAREZ, M.D.
AND
B. L. FREEDLANDER, M.D.
SAN FRANCISCO

It would seem at first sight as if there could be little justification for another article on the rate of progress of food residues through the bowel, because today almost every physician and layman is satisfied that it takes normally from twenty-four to forty-eight hours. Every roentgenologist knows that most of the barium leaves the body within twenty-four hours, and that only traces can be seen after forty-eight hours. It appears now, however, from the studies that we have made that the giving of a large amount of indigestible material like barium with a small meal of gruel or milk must bring about unusual and abnormal conditions. The added bulk of indigestible residue may act perhaps like a large dose of agar or of liquid petrolatum, and, as is well known, patients who are being examined roentgenographically to find the cause of a severe constipation will not infrequently come back for their twenty-four hour examination with an almost empty colon. In other words, their constipation has been temporarily relieved.

It would seem clear, then, that when we want to study the normal rate of progress, we should choose some material without appreciable bulk which can be

mixed intimately with the usual food taken by the subject, which will have little or no influence on the motility of the bowel, and which will lend itself easily to quantitative measurements.

✓We believe that we have found such a substance in the shape of very small glass beads, fifty of which are given at one time in a gelatin capsule. They are chemically inert, they mix intimately with the food, they can hardly have much influence on intestinal motility, certainly no more than that of the many berry and fig seeds, and bits of skin and fiber that are found so commonly in the stools and they can easily be counted after the fecal material has been sieved. By giving different colored beads on each of three successive days, we have been able to make three rate determinations on each subject with almost no extra work for ourselves. The beads used are the smallest we have been able to find on the market. Their largest diameter is about 2 mm. They have been taken with either the morning or the evening meal, and after that the stools have been voided into large-mouthed jars and have been brought to the laboratory. There they have been sieved, and the number of beads found in each stool has been charted as a percentage of the number taken. Note has been made also of the form and size of the stools.

The idea of using this method was obtained from an article by Elliott and Barclay-Smith,¹ who studied the distribution of food along the digestive tract by giving such beads to rabbits and then killing them at various intervals. A somewhat similar technic has recently been employed by Burnett² who gave from 30 to 50 c.c. of French millet seeds and noted the time, first, when the seeds appeared, and later when they practically disappeared. These seeds are probably better than carmin or charcoal for the identification of fecal material from one particular meal, but they do not make possible quantitative studies such as we have made with the beads.

Our subjects for the most part, were avowedly healthy young medical students and interns—all men. In addition, a number of office and hospital patients were studied, some with constipation and some without. The hospital patients were in the surgical wards convalescing from minor operations. There were some women in the second group. We wish to thank the volunteers who faithfully brought their specimens each day throughout what must have been a troublesome week. Completion of this work was delayed for years by the fact that many who took the beads either lost one or more stools or else gave up the experiment too soon. ✓The work was started in 1913 by one of us (W. C. A.), continued at various times by H. S. Parsons and F. B. Taylor, and finished in 1924, by one of us (B. L. F.). The results obtained by all four workers have been in entire agreement, which makes us feel all the more confident in publishing views so different from those commonly held by the profession. We have recently been encouraged also by the appearance of the articles by Burnett, some of whose findings and deductions are very similar to ours.

RESULTS OF THE STUDY

✓As will be seen by glancing at Chart 1, the striking fact that has emerged is that the normal individual with a good digestion and a daily bowel movement does not, in twenty-four hours, pass 100 per cent or anything

15. Graham E. A. and Cole W. H. Roentgenologic Examination of the Gallbladder. J. A. M. A. 82: 613 (Feb. 23) 1924. Graham E. A., Cole W. H. and Copher G. H. Visualization of the Gallbladder by the Sodium Salt of Tetrabromophenolphthalein. J. A. M. A. 82: 1777 (May 31) 1924.

* From the George Williams Hooper Foundation for Medical Research and the Department of Medicine, University of California Medical School.

1. Elliott and Barclay-Smith. J. Physiol. 71: 293, 1904.
2. Burnett. J. L. Boston M. & S. J. 18: 4371 (Apr. 14) 415 (Apr. 21) 1921. Am. J. Roentgenol. 10: 599 (Aug.) 1923.

like 100 per cent of the beads. There were two individuals who passed around 85 per cent in twenty-four hours, but most of the subjects took four days in which to get rid of 75 per cent, and there were some who passed only from 50 to 60 per cent in nine days. As

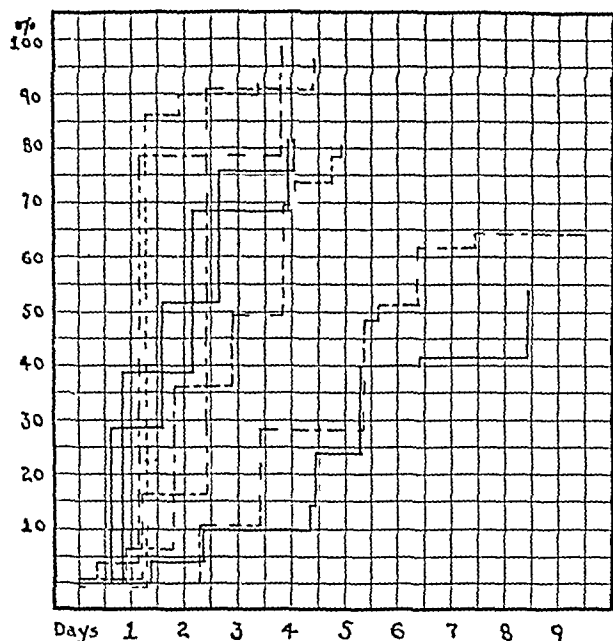


Chart 1—Wide difference in the rate of passage of beads in eight healthy young men, a fast rate of 85 per cent in twenty-four hours, an average rate of 75 per cent in four days and a slow rate of 60 per cent in nine days. The abscissas represent days and the ordinates per cent of the number of beads ingested.

Burnett has pointed out, those with the fast, hitherto supposedly normal rates had voluminous, soft, poorly digested and frothy stools. Those with the slower rates had well formed, sometimes ovulated, stools with no gas and fewer food residues. Naturally, those with the slowest rates showed a tendency to constipation.

On taking the averages of the data in the thirty-seven graphs that seemed to fall most closely together in one class midway between the very fast and the very slow, we obtained percentages that plotted out as in Chart 2. There it will be seen that some 15 per cent of the beads are passed at the end of the first day, 40 per cent come through on the second, perhaps 15 per cent on the third, and from 5 to 10 per cent on the fourth and fifth. Between 90 and 100 per cent thus come through by the end of the week.

When this work was started, and we failed repeatedly to get more than 90 or 95 per cent of the beads in the first week, we thought it must be due to the fact that either the subject had failed to bring in all his stools or else that some beads had gone through the sieve, but we found later that there was no need for resorting to this explanation, because when we followed a subject long enough we could generally get back 100 per cent of the beads. Thus, in one instance, in the case of a constipated person, the stools were sieved carefully until all the beads were accounted for, and the last one came through on the fortieth day. Frequently, also, when we used the same subject over again after an interval of several days or weeks, we would find beads that had been given during the first experiment.

One of the things that has puzzled us most in this study is the fact that the beads given on the second day nearly always come through a little faster than those

of the first day, and those given on the third day come through even faster, so that the third line in the graphic record often crosses the second and even the first, as will be seen in Charts 2 and 4. This has occurred so frequently that it can hardly be accidental. The two explanations that we have thought of are, first, that the beads may stimulate peristalsis so that the evacuation of the colon is speeded up, and second, that the first set of beads may be retained to a certain extent in the haustra of the colon, in the appendix, or elsewhere, where the bowel makes a special effort to digest them. The second and third sets might then have to move on without any delay because this space in the bowel would already be taken. In favor of the first explanation was the fact that the stools were sometimes softer and more voluminous toward the end of the experiment, indicating a more rapid progress of all the food residues as well as of the beads. The difficulty remains, however, that the first set of beads does not seem to be influenced by this speeding up process. They apparently get out of the central current and off into the haustra or other folds of the colon. In a few instances, we were able to study the rate of progress of the beads in the same individual on two or more occasions. Ordinarily there was considerable resemblance between the different graphs for the same man, but sometimes there was a good deal of difference.

EXPERIMENTS ON ANIMALS

In order that we might get a better idea of the distribution of the beads along the bowel, we repeated some of the work of Elliott and Barclay-Smith on rabbits. They found that within six hours after ingestion, 10 per cent had reached the middle colon, i. e., 3 or 4 meters from the mouth, 50 per cent were still in the stomach, 10 per cent were in the small intestine, and 30 per cent were in the cecum and sacculated colon.

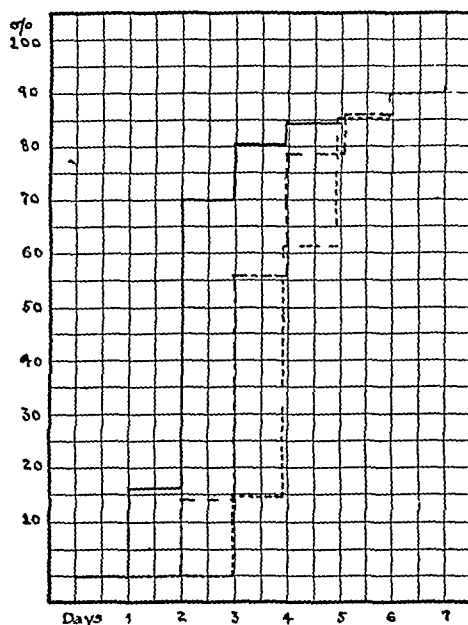


Chart 2—The most typical rate observed, the figures charted being averages from thirty-seven determinations. The beads given on the second and third day tend to catch up with those given on the first.

They never at any time found many beads in the small bowel. Our results have been very similar. The two places in which beads can usually be found for a week or more are the stomach and the cecum. It is interesting to note that in one rabbit the appendix contained

thirty-four beads, or nearly half of those found in the whole digestive tract. In that appendix there were 26 per cent of the beads given seventy-seven hours before, 28 per cent of those given fifty-two hours before, and 14 per cent of those given twenty-seven hours before. Elliott and Barclay-Smith mention having seen a similar accumulation of beads in the appendices of some of their rabbits. In three out of four of our rabbits, however, the appendix contained no beads. It would be an interesting experiment to give beads to women several days before they enter the hospital for pelvic operations, so as to see how often and to what degree these foreign bodies stagnate in the human appendix.

In the course of some work on rickets done in this laboratory Dr. Martha Jones has observed that 5 grams (0.3 gm.) of carmin given to puppies will come through so completely in twenty-four hours that none can be seen macroscopically after that. If 10 grams (0.6 gm.) is given the puppies develop diarrhea so that it is very questionable whether carmin is a suitable substance for measuring the normal rate of progress of the food residues.

K. F. Meyer and Jessie Easton will soon report, from this laboratory, extensive studies on the passage of washed, detoxified spores of *B. botulinus* through the digestive tracts of rabbits and guinea-pigs. In all but one instance, these spores seemed to have little or no influence on the animal. Large numbers came through in twenty-four or forty-eight hours, a good many for the next week, and then a few at intervals for months afterward. It is hard to believe that any of these spores could have started to grow, because it takes so few active organisms to kill an animal. Similar work with similar results has been done recently by Holman and Fernish,³ who used *B. anthracis*. The results of these studies with a microscopic indicator check well with those with the beads, showing again that the method used by us is probably a reliable one.

STUDIES WITH BARIUM

While sieving the stools from a number of individuals who had been roentgenographed a week or more before the beads were given, it was noticed that a good deal of barium often settled out in the bottom of the vessel through which the wash water flowed. It was noticed also that many of those patients who seemed at the time of their last screen examination to have voided all their barium still had so much in the bowel that satisfactory kidney plates could not be made for another week or ten days. Even purgation seemed often to have little effect in getting rid of this small residue. We felt, therefore, that it would be interesting to study the barium in the stools quantitatively, so as to see what fraction comes through rapidly and what remains for slow extrusion. Accordingly, a number of healthy students were each given 60 gm. of barium in milk, and the stools were collected for five days. Weighed portions were incinerated, and the ash was

treated with nitric and hydrochloric acid. This dissolved everything but the barium. In order to be sure that all the barium was being retained, some dilute sulphuric acid was added, and the precipitate was washed, dried and weighed.

Chart 3 shows the results of the analyses in the seven cases in which there was no question about any loss of stools. The quantitative determinations agree quite well with what we should expect from our experience with the roentgen ray, i. e., they reveal two groups of cases. In the first, the bulkiness of the barium or, possibly, its chemical action on the bowel brought about the rapid expulsion within twenty-four hours, of from 45 to 85 per cent of the dose. After that, as we would expect from the work with the beads, there was a forty-eight hour interval without stools, in which the abnormally empty colon filled up again. In the second group there were a few cases in which the powder seemed to be constipating, and no movement of consequence took place until the third day, when 75 per cent came away. In both groups, we see that, just as with the beads, there was a slow extrusion of the remaining barium for four or five days more.

The tendency of the barium meal to speed up the progress of food residues through the bowel is well shown in Chart 4. The data charted there were obtained from a young man who took the usual barium meal with his first set of beads. It is clear that the first set went through much faster than did the second and third. We see also that the stool on the second day was a large one which emptied the colon to such an extent that after that for four days it had to fill up slowly. On the fifth day there was another even larger cleanout, followed, as we would expect by some "constipation." The stool passed on the eighth day was the first one to be solid, the others were mushy.

In order to make sure that our interpretation of these phenomena was correct, we gave laxatives to some of the subjects after they had taken beads.

Next day, from 80 to 90 per cent of the beads came through, and then, for the next forty-eight hours, there were no bowel movements at all. The textbooks tell us that this constipation after purgation is due to an astrigent after-effect of the drug, but the new explanation seems to us to be simpler and more satisfying. Time and again during this study, we have noted that any unusually large defecation or any spontaneous attack of looseness of the bowels which brought away more than the usual number of beads was followed by a period during which the stools were either small or entirely lacking.

CONCLUSIONS

The most interesting fact that emerges from these studies is that the colon normally retains food residues from meals taken during the preceding week or before. Ordinarily, about 80 per cent of the residue from any one meal is extruded by the end of the fourth day. The rate varies markedly, however, in normal young men who have one or more satisfactory bowel movements every day. The fact that most of the stools are mix-

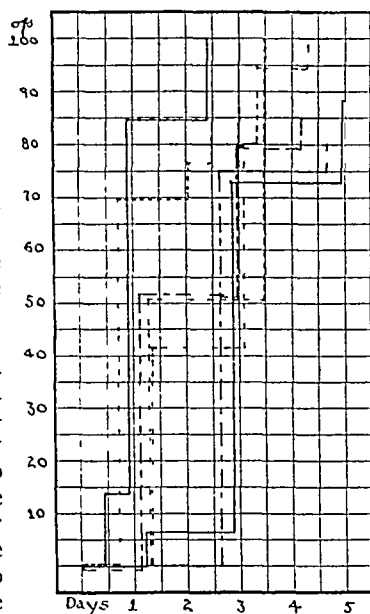


Chart 3.—The slow and the fast type of barium extrusion in seven individuals. Comparison of these curves with those for the beads reveals the tendency to a more massive extrusion of the barium.

³ Holman W. L. and Fernish C. A. Am. J. Hyg. 3: 640 (Nov.) 1923

tures of food residues—some, such as meat and starch, comparatively easy of digestion, and others, such as seeds and skins, very difficult of digestion—suggests that the bowel has little or no ability to pick and choose between those materials which are ready for extrusion and those which might with advantage be held over for further chemical action. Actually, we know that mushy material is constantly flowing into the cecum, where a mixture of new and old must take place. Beyond that region, in men and women with formed stools, there is probably little or no mixing. We have seen stools with such sharp divisions between the residues from two different meals (beans and berries, for instance) that there could be no doubt that after leaving the ascending colon, those residues had gone the rest of the way to the anus like cars on a track. It is a point of some practical importance that when the end portion of a formed stool is quite soft we can say with a considerable degree of confidence that the colon has emptied itself as far back as the ascending colon and we need then have no fear of a masked intestinal stasis.

But to get back to the problem of the mixture in the cecum. If we had a number of individuals with artificial anastomosis at the hepatic flexure we could soon, with the help of the beads, say what proportion of the cecal contents is passed onward every twenty-four hours, and the number of beads recovered each day would bear a constant relation to the number of those remaining the day before. If we assume, after the manner of the mathematicians when they are simplifying a problem, that there is neither mixing nor more than twenty-four hours' delay in the colon beyond the hepatic flexure, our averages from those subjects whom we consider to have had the most typical rates of passage suggest that a sixth of the material that arrives from the ileum each day goes right on, together with about half of what is in the cecum. This supposition will account for the figures obtained in the first three days. After that, the extrusion of the beads falls rapidly below what would be predicted from the formula. The trouble, of course, is that there are innumerable variables. In some men and women, the cecum must empty itself almost completely every day, and in others there must be a great deal of stagnation throughout the colon. We know from roentgen-ray studies that in some individuals the cecum empties early, and in others it empties late, after the rest of the colon has been cleared of barium.

The essential point is that wide variations are perfectly compatible with good health. We have carefully questioned the men with the fast rates and those with the very slow ones, and have been unable to draw from them any admission of poor digestion or poor health. Theoretically, we would agree with Burnett that the men with slow rates and well formed, well digested stools should have the good health and those with the

fast rates and voluminous, mushy, badly digested, and frothy stools should have poor nutrition, flatulence and indigestion. In office practice that is often true but it is not a rule, because some people are so insensitive or their factors of safety are so great that they remain oblivious to a high degree of intestinal indigestion.

One thing that has impressed us is the frequency with which mushy, unformed stools are encountered in normal young men. We had always had the idea before that the normal stool is formed. Another noteworthy observation is that few of these men were as regular as they thought they were. Possibly temporary changes in diet caused increases in the amount of feces and in the rate of passage and after that there would be the periods of "constipation," during which the colon was filling again.

The valuable lesson that may be learned by the clinician is that, when the colon is well cleaned out by a purge or by a large defecation no bowel move-

ment should be expected or demanded the next day. It will appear only if the colon is so sensitive that it can respond to the distention brought about by the food residues from one day. In some cases of course, a chemical irritation may be the more important factor, but, ordinarily, a certain amount of distention seems to be the main stimulant for colonic contraction. If very little food is taken as after an operation or during an illness, or if the colon is unusually long or large in diameter, the period of normal waiting may be several days or a week or more. To give purgatives during this time is meddlesome and unjustifiable except in those cases in which the individual or his relatives become sick with anxiety over the dangers of autointoxication or in those cases in which headaches actually develop. It is question-

able therefore whether purgatives or laxatives that produce copious movements should ever be given oftener than two or three times a week. Certainly, any one who has been purged and who wishes to get back to normal must expect to wait a day or two for his first normal movement.

SUMMARY

The commonly accepted view that food residues from any one meal are evacuated in the next twenty-four or forty-eight hours is shown to be largely erroneous.

It is seen now that the usual large amount of barium given with a small meal acts like agar or liquid petrolatum and speeds up the progress of material through the bowel.

In the study here reported, fifty small glass beads were used as an index to the rate of progress of the everyday food of the individual. Ordinarily, some 15 per cent of these beads are passed on the first day, 40 per cent on the second, 15 per cent on the third, and 10 per cent on the fourth day. After that, it

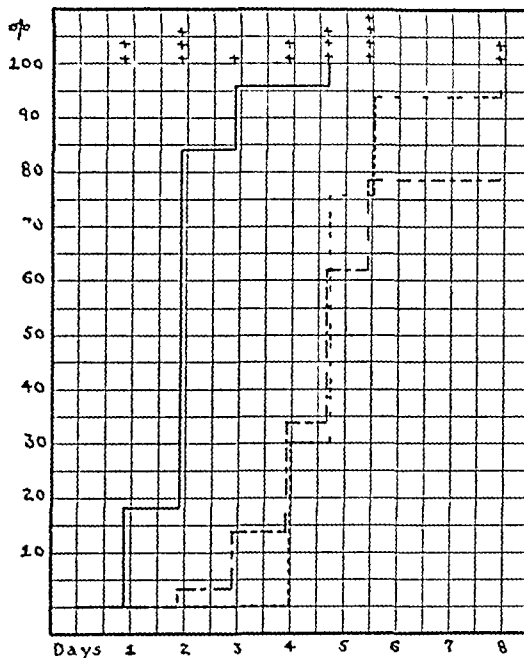


Chart 4—Later passage of the first set of beads when 60 gm. of barium is given with them. Comparison should be made with Chart 1. The first six stools were mushy. No barium was visible in the stools after the third day.

may take days or weeks before the last few beads are recovered

The rate of progress varies widely in normal persons. No symptoms of disease were found in men and women who took a week or more to pass 70 per cent of the beads. Fast rates, i. e., 85 per cent in twenty-four hours, are associated with the passage of soft, badly digested stools.

Purgative drugs or spontaneous attacks of diarrhea empty the colon so thoroughly that often for one or two days afterward there are no bowel movements or else very small ones.

After a barium meal, the quantitative analysis of the stools for that drug shows that, although most of it is extruded in the first twenty-four or forty-eight hours, a considerable amount remains to come away slowly during the next few days.

These observations must modify some of our views about intestinal auto-intoxication and the need for the frequent use of laxatives.

177 Post Street

LEAD POISONING

ITS SYMPTOMATOLOGY AND DIAGNOSIS *

MARVIN D. SHIE, M.D.

Acting Assistant Surgeon U. S. Public Health Service
CLEVELAND

The first essential in the discussion of this subject is the classification of the various types of lead poisoning. For a long time the literature has been filled with references to acute or chronic plumbism, but, with the exception of Sir Thomas Oliver, apparently no one has taken the trouble to define what is meant by these terms. Oliver has classed under acute lead poisoning cases of encephalopathy only. For the purposes of this discussion, however, I shall make this class a little broader in scope, so that it will include all cases in which marked symptoms and disability occur suddenly and, usually, after only a brief exposure. In this group, I shall also consider those cases which, after a long period of exposure, suddenly develop striking symptoms of lead intoxication as a result of a sudden impairment of excretory function. I shall classify as chronic those cases developing slowly as the result of various pathologic changes in the body and occurring without the dramatic manifestations so commonly present in acute cases.

The group into which any particular case will fall is determined almost entirely by individual susceptibility to lead. Personal idiosyncrasy is believed to be more striking in lead than in any other metallic poisoning. Some workers will develop an acute attack after working only a few days, while others may work for months at the same employment without harm.

The signs and symptoms of acute lead poisoning are usually referable to either the gastro-intestinal tract or the nervous system, although we sometimes see cases involving both. The intensity of the prodromal symptoms is commonly greater than in the chronic cases. At first, the patient often has a sweetish metallic taste in the mouth, then anorexia, nausea and sometimes vomiting. There may be also severe headaches, insomnia, general asthenia and a feeling of lassitude. These symptoms are frequently followed quickly by diarrhea,

due to the gastro-enteritis so often present in acute cases. On the other hand, after a few days of general malaise and constipation, the patient sometimes develops sudden, severe colic. This may occur without warning or be preceded several days by vague, colicky pains. Accompanying this there is frequently pallor of the skin, an increase in blood pressure, and a slow, hard pulse. All these signs are probably due to the same factor, a spasm of smooth muscle causing arterial and intestinal constriction. Usually there is also some albuminuria due to an acute nephritis affecting the cells of the renal tubules.

In the form attacking the nervous system, an acute neuritis often occurs, causing severe pains along the nerves affected and sometimes a distal ataxia. There may be a neuritis of the optic nerve, later resulting in optic atrophy and blindness. In the more severe but, fortunately, comparatively rare cases, the encephalopathies, there is severe headache, delirium, convulsions, vomiting and retinal changes, with diplopia or transitory blindness and sometimes paralysis, coma and death. It is thought that these symptoms are caused by cerebral edema and minute cerebral hemorrhages.

The ordinary, acute case occurs comparatively soon after exposure has begun. In those cases, however, which suddenly occur after a person has been exposed for years, there is often a lead line indicating that lead absorption has been going on for some time, even though there may have been no symptoms. Such attacks are due to a sudden change in metabolism whereby the person's excretion can no longer keep pace with his absorption, and lead intoxication results. These cases are often precipitated by an acute infectious disease or by an alcoholic debauch. A patient of this sort sometimes develops a sudden paralysis with almost no previous symptoms.

The blood in acute plumbism may show basophilic stippling of the red cells, but stippling is by no means constant. McCord, Minster and Rehm¹ of Cincinnati believe, however, that in all cases of lead poisoning an excess of basophilic substance is present in certain of the red cells and is distributed uniformly throughout the cells. Under certain conditions, this substance can be agglutinated and demonstrated, both qualitatively and quantitatively. The presence of this substance is regarded as an evidence of the precocious introduction of red cells into the circulation, such as occurs in anemia. They believe that, while the test is not diagnostic of lead poisoning, it is at least highly significant, and any lead worker showing this basophilic aggregation should be placed on lead eliminating treatment, whether or not he shows clinical signs or symptoms of lead poisoning.

REPORT OF CASES²

Three cases studied during a survey of the pottery industry are representative of the types of lead poisoning just described.

CASE 1—*Mild, acute plumbism attacking the gastro-intestinal tract in a man markedly susceptible to the effects of lead.* A man, aged 24, a workers' manager in a pottery, who, as such, did not come in close contact with lead, during the absence of a saggar washer painted saggars with a solution of red lead. He quickly developed severe diarrhea, anorexia, nausea, headache, dull abdominal pain, albuminuria and marked lassitude. Examination of the blood was negative. The symptoms

¹ McCord C. P., Minster Dorothy K. and Rehm Mathilde. The Basophilic Aggregation Test in Lead Poisoning. J. A. M. A. 82: 1759 (May 31) 1924.

² Several of the cases reported in this paper were also reported by the author in a previous paper (Industrial Lead Poisoning J. A. M. A. 76: 835-842 [March 26] 1923).

* Read before the joint meeting of the Section on Pharmacology and Therapeutics and the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Fifth Annual Session of the American Medical Association Chicago June 1924.

cleared up soon after he stopped this work but began three days after its resumption, necessitating that he discontinue work of this kind altogether.

CASE 2—Acute form, with early paralysis which sometimes occurs almost without warning. A man, aged 57, had dipped in a pottery for twenty six years without signs or symptoms of lead intoxication. He had then farmed for three years, at the end of which time he again began dipping. In a few days he began to have prims in the right foot and ankle and along the course of the peroneal nerve. In addition he had a metallic taste, nausea, and tremors of the tongue and the fingers. One week later, he suddenly developed peroneal paralysis of the right leg, with foot-drop. He discontinued work for four months during which time he gradually regained strength in the peroneal muscles and power of dorsiflexion of his foot and toes. The neuritic prims gradually disappeared.

CASE 3—Acute lead encephalopathy, occurring in a patient who had been exposed to lead for some time but whose excretion could under ordinary circumstances, keep pace with the lead absorption. When this balance became disturbed, lead intoxication resulted. A man, aged 42 had worked as a glaze kiln placer in a pottery for six years without any signs or symptoms of lead intoxication. He had a lead line, however, which indicated a certain amount of lead absorption. Suddenly he developed rather marled pallor, weakness of the muscles of the arm associated with general asthenia, tremors of the tongue and the fingers and increased nervous excitability. About two weeks after the onset of these symptoms he suddenly lost consciousness and was unconscious for about an hour. This was followed by severe headache, ptosis of the right upper eyelid and diplopia. The blood pressure was systolic 160, diastolic, 100. The Wassermann reaction and venereal history were negative. The hemoglobin was 88 per cent, the red count 4,200,000 and there was no basophilic stippling. Almost complete recovery resulted after six months treatment and the patient returned to his work.

Chronic lead poisoning, rather than acute, occurs in those persons who have either superior eliminative powers or an increased tolerance for lead. In these, the long continued absorption of lead causes a more or less generalized fibrosis, which eventually affects practically all the organs of the body. Just as these pathologic changes occur gradually, so do most of the symptoms come on insidiously, and may be referable to almost any organ in the body. In many cases, it is possible to detect signs of lead absorption before symptoms of intoxication are present and to forestall the latter by taking measures to prevent any further lead absorption and to eliminate that which has already occurred.

SIGNS

The most common and easily detected sign of lead absorption is the lead line in the gums. It is caused by a deposit of lead sulphid in the cells of the deeper layers of the gums, and, if bismuth is excluded, is positive evidence that lead is, or has been, present in the blood stream. This line occurs as a fine stippling near the gum margin and may be readily demonstrated by inserting a flat, white toothpick between the gum and the tooth. This sign is more likely to be present among those lead workers who have bad teeth and diseased gums, but I have found it present many times when both teeth and gums were healthy.

A large number of lead poisoning patients, however, do not exhibit a lead line, but in most of these the presence of lead may be detected in the urine. It is possible that lead absorption may exist without the appearance of lead in the urine, provided the amount is small enough to be stored away completely in the tissues. The presence of lead in the feces does not necessarily prove absorption, for the lead may be

ingested in an insoluble form and may pass through inertly.

As the lead line is absent in a large number of cases and the detection of lead in the excretions involves a technic often too difficult for general practice, it becomes necessary to rely on certain other symptoms to herald approaching intoxication. Many of these symptoms would be considered negligible in an ordinary individual but become significant in one exposed to the lead hazard.

SYMPTOMS

The symptoms of chronic lead poisoning may be roughly grouped under three main heads, referable to the gastro-intestinal tract, the neuromuscular system and the circulatory system. In any given case, one of these groups usually predominates, although symptoms from the other groups also may be present.

In the following discussion, in each group signs and symptoms are listed in the ascending order of their occurrence and increasing severity. In almost all cases the prodromal symptoms are general malaise and asthenia often accompanied by insomnia, dizziness, general lethargy, loss of weight, and headaches.

The most common symptoms referable to the gastro-intestinal tract are a sweetish, metallic taste, nausea, loss of appetite, abdominal pains and tenderness, constipation and colic. A metallic taste and an ill defined nausea may be present for a long time without any other marked symptoms. On the other hand, they may come on rather suddenly and presage more severe developments. They are also probably responsible, in some degree at least, for anorexia. The loss of appetite is noticed first for breakfast only, but later becomes more marked, so that there is scarcely any appetite for any meal. This is an important symptom, for if a lead worker eats no breakfast, he will absorb ingested lead much more quickly because of the greater acidity present in his stomach, and intoxication will therefore occur more promptly.

There may be mild fleeting generalized abdominal pains and tenderness, often associated with constipation or constipation alternating with diarrhea, for a number of months without the occurrence of anything more dramatic. Again, these pains may be the warning that an attack of lead colic is impending. In the latter case the constipation becomes much more obstinate and the bowels can be opened only with great difficulty. The abdominal pain increases in intensity, localizes around the umbilicus, and assumes a rhythmic, colicky nature. Sometimes the colic occurs suddenly, without previous warning, and the pain becomes so severe that large doses of morphin may fail to relieve it entirely. Along with the colic there is a contraction of the abdominal muscles, so that the abdomen becomes somewhat scaphoid and hard to the touch. There may also be nausea and vomiting, and the expression is fixed and drawn. During the attack there is an increase in blood pressure and a slowing of the pulse, together with an increase in the pallor of the skin and mucous membranes and a decrease in the urinary output. The colic may pass away in the course of several hours or may last for several days. Sometimes, following an attack, vague abdominal pains and tenderness may be present for a number of days.

One of the most common symptoms referable to the nervous system is headache, which is usually frontal in type and comes on gradually over a long period of time, so that the patient is unable to state just when it began. In some patients, it becomes almost continuous

and is very severe. In many cases there is a somewhat similar development of muscular and joint pains, and "lead rheumatism" and "poor man's gout" are frequent complaints. It is likely that these symptoms are the result of scattered patches of neuritis. The same pathologic condition is also responsible for the gradual development of the extremely common tremors of the fingers in the affected limb. Tremors of the tongue, eyelids and lips are very common in old cases, and are probably central in origin. As intoxication increases, muscular fibrillation is sometimes seen, and incoordination occurs.

As the neuritis progresses, a distal ataxia appears, and there is difficulty in executing the finer movements of the fingers, paresthesias develop, followed by gradual muscular weakness and, sometimes, by atrophy. These are present first, and to a greater degree, in those muscles which are used most. In one who works a great deal with his hands, the grip becomes weaker and there is a lessening of the power of dorsiflexion. In a number of cases, I have seen these signs associated with moderate local edema. Often, these signs are a warning of approaching palsy, in other cases, paralysis occurs suddenly without previous local disturbances.

There are a number of different types of lead palsy, but the most common is the antebrachial type, which causes wrist drop. Other forms are the brachial, which affects the muscles of the shoulder girdle, the Aran-Duchenne, which affects the small muscles of the hand, and the peroneal type, which affects the peroneal muscles and the extensors of the toes. In rare cases there is a generalized paralysis, which may involve the diaphragm and cause death. After paralysis occurs, the paresthesias, neuritic pains and other symptoms that have heralded its approach usually disappear. Occasionally, a moderate local edema persists for some time.

Some patients develop mental symptoms somewhat like those of general paralysis. There is first general nervousness and instability, followed by periods of depression or melancholia, and the memory becomes defective. The speech is tremulous, slowed and interrupted, and the gait uneven and uncertain. The pupils are often unequal, and hippus is present. Sometimes there may be hallucinations or even transient delirium. The knee jerks may be diminished or absent.

The most common symptoms referable to the cardiovascular system are pallor, anemia, changes in the blood cells, arteriosclerosis, an increased blood pressure and moderate cardiac hypertrophy.

Pallor of the skin and mucous membranes is an early and prominent symptom, and is seen in practically all cases. This condition is only partly due to anemia, however, for it is often present before anemia develops, and is probably due mainly to a constriction of the peripheral arterioles. The degree of anemia varies markedly in different cases. In perhaps the majority of cases, it is only slight, even when intoxication is severe. In other cases, anemia may be quite marked, but, as a rule, the red count seldom falls below 4,000,000. It is of the secondary type, and structural changes in the red cells are not marked. While it is true that basophilic stippling sometimes occurs, it does not appear with the frequency with which it was formerly credited, at least in chronic cases. The presence of a moderate degree of mononucleosis is practically constant. The hemoglobin usually ranges between 65 and 90 per cent.

In patients who have been absorbing lead for some time, there gradually develops an arteriosclerosis. As this progresses, an arteriosclerotic type of chronic

nephritis occurs. These factors combine to produce a moderate increase in blood pressure, and a moderate cardiac hypertrophy. In some cases, probably as a result of sclerosis of the valves of the heart, there develops slight valvular incompetence.

In addition to these three main groups of symptoms, there are certain other disturbances worthy of mention. Parotitis and oophoritis are encountered occasionally, and, rarely, a case of orchitis. Among women, irregularities of menstruation are common, and abortions are frequent in those exposed to the lead hazard.

The following case reports are illustrative of some of the symptom complexes just noted.

CASE 4—A man, aged 37, a dipper in a pottery for fifteen years, addicted to the use of alcohol, had marked pallor for years. Finally, he began to notice weakness in the thumbs, which became progressively worse and gradually affected both hands and wrists. Four months after the appearance of the first signs of muscular weakness, his wrists suddenly "gave way" at his work and complete bilateral wrist drop followed. At this time examination revealed marked pallor, bilateral wrist drop, with antebrachial and scapulohumeral atrophy, moderate edema of the hands, fingers and feet, marked tremor of the fingers, tongue, lips and eyelids, local muscular fibrillation, distal ataxia, mitral insufficiency, and decreased reflexes. The blood pressure was 135 systolic and 85 diastolic, the red count was 5,200,000. There was no structural change in the red cells and no basophilic stippling, 24 per cent of the white cells were large mononuclears, the hemoglobin was 95 per cent.

This case is one in which the neuromuscular group of signs and symptoms predominates, with scarcely any symptoms from either of the other groups. It is rather rare to have such a complete absence of gastro-intestinal symptoms, even of constipation, as there is in this case. It also illustrates the importance to be attached to premonitory signs of weakness in the muscle groups that are most used, in this case this was the only sign of approaching paralysis. It also should be noted that marked pallor was present without anemia.

In Case 5, many symptoms are present from both the gastro-intestinal and the neuromuscular groups and there was also a very mild secondary anemia. The amount of pallor present was much greater than that which would be caused by anemia alone.

CASE 5—A man aged 45, a dipper in a pottery for eighteen years, a moderate user of alcohol complained of general asthenia and malaise, frequent severe frontal headache, morning nausea, pronounced anorexia with a metallic taste, vague abdominal pains and tenderness, very obstinate, constant constipation, neuritic pains in the arm, hands and shoulders, sore muscles, painful joints, lumbago, numbness and tingling in the hands and fingers, alternating periods of depression and excitability, failing sight, insomnia, dizziness, lethargy, and loss of weight. Examination revealed marked pallor of the skin and mucous membranes, with poor nutrition and a generally unhealthy appearance. There was local emaciation of the hands, wrists and forearms, arcus senilis, sluggish pupillary reactions and hippus, spongy, cyanotic gums, teeth worn but sound, a marked lead line, tremors of the tongue, the fingers and the labial muscles, tremulous voice, impaired power of dorsiflexion of the wrists, especially on the right, enlarged joints and hyperactive reflexes. The blood pressure was 140 systolic and 80 diastolic. The hemoglobin was 65 per cent, the red count was 4,600,000, with the central pale areas increased, 16 per cent of the white cells were large mononuclears. There was no basophilic stippling.

Case 6 illustrates the selective action of lead on the generative system.

CASE 6—A woman, aged 36 had worked as a dipper's helper in a pottery for about eighteen months, when she complained

of anorexia, metallic taste, constant headaches abdominal pains and tenderness frequent attacks of colic, constant obstinate constipation, numbness, tingling and pruritus in the hand and arm muscular soreness and pains in the joints, and fits of depression without apparent cause Since she had been exposed to the lead hazard she had had dysmenorrhea and menorrhagia and one abortion Examination revealed pallor an unhealthy appearance, poor teeth spongy gums, a lead line, and a weakened grip The Wassermann reaction was negative The blood pressure was 138 systolic and 86 diastolic the hemoglobin was 80 per cent The red count was 4,300,000, the large mononuclears were 18 per cent

An interesting case of lead orchitis has recently been reported by McCord and Minster¹

The diagnosis of a well marked case of lead poisoning is by no means difficult Possibly the greatest aid in diagnosis is a history of exposure This being known every patient presenting himself with obscure symptoms referable to either the gastro-intestinal tract or the nervous system should be considered as having lead poisoning until the contrary is proved Evidences of lead absorption, such as the lead line, while not in themselves evidence of intoxication, are at least highly significant and all cases showing such signs should be considered at least potential cases of lead poisoning

As the pathologic condition incident to long continued absorption of lead is present in so many organs of the body, affecting as it does the circulatory, the digestive the nervous and the excretory systems, together with some of the organs of special sense, it follows that many of the signs and symptoms of lead poisoning are present also in many other diseases

Lead colic may occasionally be confused with appendicitis, cholelithiasis, intestinal obstruction, etc In lead colic however, the temperature is not increased, the pulse is slow, and leukocytosis is absent The centralization of the pain in the region of the umbilicus is also different from that in appendicitis or gallstone colic In intestinal obstruction, the pulse becomes weak and rapid, the abdomen becomes markedly distended, and the vomiting soon becomes fecal in character

In neuritis and paralysis due to alcohol or arsenic, there is usually a greater prominence of sensory symptoms and other evidence of the action of these poisons and the common signs and symptoms of lead poisoning are absent The history is of especial value in these cases

In the case of lead encephalopathy, it is sometimes necessary to differentiate epidemic (lethargic) encephalitis, cerebral hemorrhage and brain tumor In these, also, the history is of extreme importance The presence of lead in the urine will generally clinch the diagnosis, and punctate basophilic of the red cells is sometimes of value In these cases, which are usually acute, Liebermann's blood corpuscle resistance test is positive

In an occasional chronic case affecting the nervous system, it becomes necessary to rule out general paralysis In such cases, however, the exaltation of ideas, delusions of grandeur and uncertain temper encountered in general paralysis are absent, and examination of the spinal fluid is negative

SUMMARY

Lead poisoning is a disease in which personal idiosyncrasy varies exceedingly, and the type and the severity of the intoxication are controlled more by individual susceptibility than by the amount of lead absorbed

¹ McCord C P and Minster Dorothy K. Lead Arthritis J A M A 82: 1104 (April 5) 1924

Acute lead poisoning is characterized by sudden marked symptoms and disability, usually occurring after only brief exposure The symptoms in this type are referable either to the gastro-intestinal tract or to the nervous system Cases of lead encephalopathy are classed in the latter group

Chronic lead poisoning develops slowly as the result of gradual pathologic changes incident to long continued lead absorption, and is without sudden signal manifestations The symptoms in this type are referable to the gastro-intestinal the neuromuscular and the circulatory systems In many of the cases in this group, there have been present for some time the signs of lead absorption a lead line or the presence of lead in the urine or feces

As this is a preventable disease and recovery usually follows the removal of the cause, it is highly important that the diagnosis be made early The greatest aid in diagnosis is a history of exposure Any patient exposed to lead hazard, who presents himself with vague symptoms referable to the gastro-intestinal tract or to the nervous system should be considered as having lead poisoning until a definite reason appears for considering otherwise Valuable time should not be lost in waiting for objective signs to appear, when suggestive symptoms are present The most careful scrutiny should be given to such symptoms as loss of appetite headaches, muscular weakness, lassitude, insomnia, constipation, abdominal tenderness, pain in the muscles joints and along the course of the nerves, paresthesias and general nervousness, because they may be the warning signals of approaching severe gastro-intestinal manifestations and lesions of the nervous, circulatory and excretory systems

1041 Lakeside Avenue

THE PREVALENCE AND DISTRIBUTION OF INDUSTRIAL LEAD POISONING*

ALICE HAMILTON, MD
BOSTON

It is just about fourteen years since I made my first voyage of exploration into the lead trades, as a member of a commission appointed by Governor Deneen to study occupational poisoning in the state of Illinois Fourteen years is not very long, but in that time many changes can come, and in American industry many have come In 1910 there was no workmen's compensation law, and the damages paid to injured employees were for accidental injuries, not for illness No employer was held responsible for lead poisoning in his working force, and, in consequence, few of them knew there was such a thing, and the physicians who did know kept the knowledge to themselves In 1910, the American Medical Association had never held a formal session on the subject of occupational diseases That happy state of ignorance has vanished, there is fairly general information as to lead poisoning in industry and very creditable efforts have been made to protect workers against it

We are still however, far behind the older industrial countries in the accuracy of our knowledge of this and other trade diseases because we lack the system of sickness insurance which in England and on the conti-

* Read before the joint meeting of the Section on Pharmacology and Therapeutics and the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Fifth Annual Session of the American Medical Association Chicago June 1924

ment so quickly reveals any unusual source of trouble and which makes it possible to keep tab on a lead trade and check up on the measures of prevention. We lack also expert factory inspectors and impartial experienced government medical examiners to pass on a questionable diagnosis and to deal with a puzzling situation. Any one who has tried knows how almost impossibly difficult it is to get exact data about the incidence of lead poisoning in any one trade in this country, and, therefore, when I compare the present with fourteen years ago, I am really comparing factory conditions in the two periods and reasoning that, if lead dust and fumes have been lessened or if less lead is used, there must be less lead poisoning.

Conditions in all the lead industries have improved in fourteen years, and yet it is true now, as it was in 1910, that while the best American factories usually measure up with the best foreign ones and may even surpass them, the worst are far below what is tolerated in such countries as Germany or England or Holland. For instance, the white lead industry in the United States has undergone an enormous improvement during the last twelve years, and yet I recently visited a large plant which is still using the old methods, with many of the old familiar dangers, a plant which could not be operated in those countries.

USES OF LEAD

The use of lead in industry begins, of course, with mining. Here we have an unusual situation, for, while the older countries have for many years been handling only sulphid ore, because old mines are deep, Americans and Australians are still mining oxidized ores, chiefly carbonate and sulphate, compounds which are much more soluble in human gastric juice than the sulphid. Missouri lead mines are down below the water line now, but in the far western mines oxidized ore is still to be found, and, when the mine is dry and dusty, lead poisoning is not at all uncommon. Indeed, information gathered by A. L. Murray for the Bureau of Mines, in 1921, showed a surprising prevalence of plumbism among Utah lead miners.¹ Dr. Murray secured reports of 595 cases of plumbism in Utah in 1919 and 1920. Some of these came from the great smelters at Midvale, Murray and Tooele, but 468, or 76 per cent, were from the mines. These figures mean rates for the whole population of the state equal to 8.3 and 5.0 per 10,000, an amazing thing when one considers that it is primarily an agricultural and stock-raising community.

There is very little plumbism in Bingham, the largest center, because the mines are damp and older and the oxidized ores are exhausted. The highest incidence is in Frisco, where the mines are dustier than anywhere else, and there is more carbonate ore. Here, in 1919, 16.8 per cent of the men were poisoned, and in 1920, 27 per cent. The rate for the mining industry in the whole state was 6.7 per cent in 1919 and 5 per cent in 1920.

Sampling and smelting the ore and refining the lead follow next. Probably there is a higher rate of lead poisoning among smelter men and refiners than in any other trade. In 1913 there were at least 1,770 cases in nineteen plants employing some 7,500 men, and among these were forty-one encephalopathies, thirty-five cases of paralysis, and sixteen deaths. The greatest danger lies in the fumes of lead oxid and sulphate from the furnaces, fumes being simply oxidized compounds in a state of extremely fine subdivision. Next to that

comes the fine dust from the flues and baghouse. We still employ, in some large smelters, the most dangerous method of lead recovery, smelting on the Scotch hearth, and the same process is used in the production of great quantities of sublimed basic sulphate, known as sublimed white lead and blue lead, used in paint and in rubber. There is inevitably a great production of lead fumes and a very unusual amount of lead dust in this form of smelting, but the process has not been abandoned as yet. The smelters that I have been able to revisit fairly recently have installed many improvements and there is certainly less danger now in this branch of lead work than there was ten years ago.

Zinc smelting may carry with it a danger of lead poisoning, for the sulphids of lead and zinc commonly occur together, and, although an effort is made to separate them into a galena concentrate, which goes to the lead smelter, and a blende concentrate, which goes to the zinc smelter, in practice the blende almost always contains lead. Colorado blende concentrate averages from 4 to 6 per cent lead, and I have found plumbism a fairly common thing among the employees of a large zinc company in that state. On the other hand, Missouri concentrate, such as is worked up in La Salle County, Ill., contains only 0.5 per cent, and New Jersey concentrate, produced by a special process, has still less.

Roasting lead in the presence of air to form the oxides (red lead, orange mineral, litharge) involves danger from fumes at the furnaces, very much lessened of late years by the introduction of mechanical feeding, rapping and discharging, and the danger of dust in transporting the oxides, dumping, grinding, screening and packing. The dust problem is much harder to solve than the problem of fume control, and, although I have seen oxid plants that were literally dust-free, there are more in which exposure to air-borne plumbism is constant and quite serious. The newer methods of roasting require fewer men, but the number of oxid men, nevertheless, is decidedly on the increase, because of the constantly growing demand for litharge and red lead in making storage batteries, enamels for sanitary ware, in rubber manufacture, and in making glass and varnish, to mention only the most important uses. Lead poisoning in oxid men is likely to be of relatively rapid development and fairly severe.

White lead is made by two methods, the old Dutch process, slow and requiring much hand work, and the Carter, dusty, but quick and largely mechanical. Fortunately, it is the latter that is increasing most rapidly, and another improvement in this industry is the gradual replacement of dry white lead, ground in oil, by pulp lead, which is made by grinding wet lead with oil till the water has been driven out by the oil, and dangerously dusty work avoided. Most white lead works are now equipped with excellent exhausts, automatic dumping, enclosed dry pans and chasers, and many other devices for the protection of the men. Ample washing facilities are universally provided and there is always a physician in connection with the plant. Cases of acute plumbism in white lead men are fairly infrequent now, yet every now and then a serious case, perhaps an encephalopathy, finds its way into a hospital, showing that a susceptible workman still faces a risk when he takes employment in such work. It is the almost universal experience that negroes employed in white lead sicken more rapidly than white men and are far more liable to the brain form of plumbism.

Legge, chief medical inspector of factories in Great Britain, says that the lead industry which, at present,

¹ Relation of Lead Poisoning in Utah to Mining. Report of Investigation. Bureau of Mines. August 1921.

is responsible for the largest number of cases of plumbism, is no longer white lead or pottery glazing but the making of storage batteries, electric accumulators as the English call them. Making plates for storage batteries involves handling litharge and red lead, and, if old batteries are repaired, the brown peroxide also. It is admittedly a very dangerous trade and it has the disadvantage of requiring little skill, so that the working force is likely to be very shifting. I made two visits, less than a year apart, to one of the largest plants and found that during the interval the whole force in the pasting room had changed, and where there had been only Russian Jews there were now only southern Slavs. This is always a bad feature. It is impossible to have real shop discipline in so shifting a body of workers, and it is too much to expect that a foreman will take much interest in a gang of men he knows will be gone in a month or so.

There were six large storage battery works in 1914, when I studied the trade for the government, there are seven now. I have been able to revisit five, and of these two are vastly better, two are decidedly improved, and one is a little less bad. But the number of men exposed to the hazard—and not one plant is free from hazard—is much greater than ever before and promises to keep on increasing because of the increase of automobiles and the enormous new demand for batteries for radio equipment. This is certainly one of the most important sources of industrial plumbism.

Enamels for bathtubs, sinks and other plumbing goods constitute one of the chief uses for lead oxides, especially red lead, and here also the number of men exposed is greater than ever before, for we are said to have produced no less than 700,000 new bathtubs last year. These enamels used to contain from 0.5 to 20.0 per cent of soluble lead,² according to the flexibility needed, for lead renders the enamel more fusible. The finely ground dry enamel is scattered over the red hot tub and the enameler must work in an atmosphere foggy with the dust. However, efforts to lessen the danger have been made of late, and it is highly probable that plumbism is not so prevalent in this industry as it was in 1914, when fifty-four out of 148 men whom I examined had unmistakable signs of chronic lead poisoning.

The glazing and decorating of pottery is an industry that has increased a good deal of late years and which seems to improve very little, so far as the control of lead poisoning goes. Twelve years ago I studied the pottery industry in New Jersey, Pennsylvania, Ohio and West Virginia, and when in 1921, I read the report of a recent investigation made by the U. S. Public Health Service I could discover little improvement in the conditions which had seemed so deplorable in 1912. The physicians of the Public Health Service examined 1,809 men and women engaged in work with lead glaze and found a rate of plumbism equal to 13.5 per hundred, while the rate in British potteries in 1913 was just one fifteenth of that, 0.9 per hundred. It is easy to account for this difference, for our potteries use large quantities of white lead glaze and use it carelessly, and the pottery manufacturers in these states do not hold themselves responsible for the health of their employees. British factory regulations are so framed

as to offer every inducement to the manufacturer to use as little lead as possible, for if his glaze contains more than 5 per cent soluble lead, he must submit to all sorts of onerous and expensive rules.

An industry that is using less lead relatively, but more absolutely, is the manufacture of rubber goods. Lead, usually litharge, sometimes sublimed lead sulphate, is added to crude rubber to accelerate vulcanization and to make the product heavier. Lately, organic accelerators, such as thiocarbonilid and hexamethylenamin, have been taking the place of lead, and yet, so great is the increase of rubber manufacture that there is actually more lead sold to rubber factories than ever before. The handling of the lead is carried on in only two small departments, weighing the compounds and mixing them with crude rubber on heated, open mills. Dust is the danger in both places. A factory employing 2,000 hands may have only twenty-five or thirty men in these two departments, and yet among these men there may be a high rate of poisoning, and the form may be very severe.

LEAD IN PAINT

The painters' trade is still the most important of the lead trades, and it is the great stumbling block to the sanitarian in every country, for it is the one that shows the least progress toward the lessening of plumbism. That is the reason for the movement, sponsored by France, for the abolition of lead paint. The French argue that it is not possible to control the conditions under which the painter works, now indoors, now outside, now for one contractor, now for another, that he cannot be given proper washing facilities in new buildings nor regular medical supervision. Therefore, just as they led the way in abolishing the use of white phosphorus in making matches, so they now refuse to take halfway measures with regard to lead paint, and white lead is no longer made in France and white lead paint is not supposed to be used. The British and the Germans have followed their usual method of trying to minimize the risks rather than revolutionize the industry. German regulations go far. Employers must provide washable working clothes and caps for their painters, facilities for washing, soap, towels and nail brushes, lunch rooms, and medical examination at least once in six months. Dry sandpapering of lead paint is forbidden. These rules apply also to contractors employing house painters. The prohibition of dry rubbing is found also in the laws of Austria, Switzerland and Belgium. Fortunately, the American tendency toward speeding up the job, which is greater each year in our rapid country, is leading largely to the abandonment of sandpapering, except on very high-class interior decoration, on Ford cars, and on vehicle wheels.

The general impression obtains that less lead is used in paint nowadays than formerly, but interviews with white lead producers do not confirm this. Certainly, there has been an increased production of white lead since the war, and the painting trade is still the largest consumer, with potteries coming next. The danger to the painter has been greatly increased recently by the very general adoption of the "spray-gun" for painting all sorts of factory goods, not only small objects which may be placed in a cabinet with an exhaust, but furniture, automobiles, wagons, railway and trolley cars, agricultural machinery, and, more recently, the interiors of buildings. The careful experiments of Sharpe of Toronto have shown that in such work the lead content of the air may go far beyond safety limits and that the ordinary respiratory lets a dangerous amount pass

² Legge, Annual Report of Chief Inspector of Factories and Workshops 1921.

³ We used the so called Thorpe test by which the enamel is digested for two hours with 0.2 per cent hydrochloric acid under continual agitation and then the amount of lead that has passed into solution estimated. This is the test applied to all lead mixtures used in industry in England and the rules regulating the trade are more or less strict according to whether more or less than 5 per cent of soluble lead is present in the mixture.

through Experiments by the Bureau of Mines show that it is possible to construct a gas mask which will filter out the oily droplets without becoming clogged, but it remains to be seen whether men will consent to work eight hours in a gas mask day after day. My guess is that the advice to do so will be treated as a "counsel of perfection," as the theologians say.

Many examinations of groups of painters have been made of late years to determine the extent of plumbism among them, the results varying somewhat, of course, according to the standard for diagnosis adopted by the investigator. Hayhurst,⁴ in 1913, found indications of chronic plumbism in fifty-nine of 100 Chicago painters. Harris,⁵ in 1918, examined 402 painters in New York City and found 143, or 35.5 per cent, with definite, clinical plumbism. Sharpe⁶ of Toronto, in 1923, examined 132 men, none of whom he was willing to declare to be suffering from plumbism at the time, but thirteen had a history of attacks of lead poisoning. The record of physical defects and symptoms that Sharpe gives is very suggestive of chronic plumbism, tremors, pallor, myalgia, constipation, headache, indigestion and abnormally high blood pressure.

White lead is not, of course, the only lead compound used in paint. There is also lead chromate, sublimed white lead and sublimed blue lead, which are basic sulphates, and red lead and orange mineral, which are mixtures of oxides, but none of these are as soluble in human gastric juice as the basic carbonate, usually known as white lead. The last is also a constituent of glaziers' putty, and only the other day I was told of four glaziers, working in a New York shop, who were found to be excreting lead in the urine. Out of seven samples of glaziers' putty that were analyzed, six contained lead.

THE PRINTERS' HAZARD

The printers' trade is different in several ways from the usual lead trades. The absorption of lead is almost infinitesimal, but it is constant and keeps up for years, because printing is a skilled trade, and a man does not usually quit it unless he must. This is an occupation that has undergone a vast improvement during the last two decades, and the improvement is largely the work of the International Typographical Union. Lead poisoning, recognized as such, has never been common in this trade, but what Naegeli⁷ called "metasaturnism," lead cachexia, chronic interstitial nephritis, and arteriosclerosis, are not uncommon. In fact, statistics gathered by the union show that there is an excess of early deaths from heart disease, chronic nephritis, apoplexy and paralysis among printers. Thus, while among white males in the registration area, only 18.6 per cent of the deaths from heart disease occurred at an earlier age than 45 years, 26.0 per cent of the deaths in printers came under that age. Apoplexy and paralysis show an even greater contrast, only 9.1 per cent of the deaths from these causes occurring under 45 years of age in the general population, but 20.4 per cent among printers.

Tuberculosis, which is really the occupational disease of the printer, has long been linked up with the lead in his occupation, because in every country it has been found that when lead fumes and dust were done away

with, the tuberculosis rate always fell. This has been for long a very puzzling problem. Why should pulmonary tuberculosis be so prevalent among men who are exposed to tiny quantities of lead, and that of a relatively nontoxic character, metallic lead, while those who are exposed to much greater quantities and more toxic forms do not have nearly so high a rate? The statistics of the great industrial insurance companies show that printers have a higher tuberculosis rate and die at an earlier age than men who work with soluble lead compounds. This is true also of plumbers and gas fitters, who work with metallic lead.

One of the lead studies carried on recently at Harvard throws light on this hitherto obscure spot. Experiments were made by Fine,⁸ in Wallace Fenn's laboratory, using the technique worked out by Fenn for determining the rate of phagocytosis of carbon particles and of silica particles. Fine used metallic lead dust and white lead dust, as well as carbon and silica, and he discovered two facts of great significance in their bearing on the printers' trade. In the first place, metallic lead dust is ingested by phagocytes far more slowly than carbon particles and even than silica, more slowly also than white lead. In the second place, metallic lead under the influence of air and moisture is in part changed to the basic carbonate, and phagocytes that have been exposed to this compound are less able to take up particles of any kind. It seems, therefore, that metallic lead particles in the lung must act much as do silica particles, setting up a fibrotic process, which paves the way for a tuberculosis just as does the silicosis of granite and flint workers.

ADDITIONAL OCCUPATIONS

It is impossible even to enumerate the occupations into which lead enters. I must confine myself to a few which are not usually associated with lead in the minds of physicians and which carry with them a decided danger of lead poisoning. The glass industry is one of the largest users of lead, but it is not the blowers who are exposed, it is the mixers and the grinders. Varnish contains litharge, but here, too, it is not the user but the maker who is exposed. A few years ago commercial artists or engravers, in mechanical retouching, used white lead paint and put their brushes in their mouths and also used white lead paint in a fine air spray. So far as I know, they still do this. We found fifteen cases of serious poisoning among these men and women, back in the days of the Illinois survey, and they and their physicians thought they were suffering either from appendicitis or from a peculiar form of zinc poisoning, because they did not know they were using lead paint. Another very common source of plumbism, which is not generally known, is the brass industry. Cheap brass and brass which needs much molding always contains lead, sometimes as much as 9 per cent. Brass polishers frequently get lead poisoning, which is not recognized as such because this is not supposed to be a lead industry and the unusually severe cases of brass founders' ague or cases of supposed brass poisoning among polishers will almost always prove to be pure lead poisoning or lead and zinc mixed.

EMPLOYMENT OF SEXES

The employment of women and boys in dangerous lead work is forbidden in Europe. We have no such legislation, so far as I know, in any state, but it is not

⁴ Hayhurst, E. R. Hygiene of the Painters' Trade. Bull. 120 U. S. Bureau of Labor Statistics, 1913.

⁵ Harris, L. A. Clinical Study of the Frequency of Lead Turpentine and Benzol Poisoning in Four Hundred Painters. Arch. Int. Med. 22, 129 (Aug.) 1918.

⁶ Sharpe, N. C. Pub. Health J. 14, 110 (March), 172 (April), 1923.

⁷ Naegeli, O. Blutkrankheiten und Blutdiagnostik. Berlin and Leipzig, 1919, p. 629.

⁸ Fine, J. The Phagocytosis of Lead Compounds and Their Influence on the Activity of the Leukocyte. J. Indust. Hyg. 5, 138 (Aug.) 1923.

needed so much here as in the older countries. I have found boys working in only two trades in which there is much risk of lead poisoning, in potteries and in printing shops, but in both of these the jobs given to the boys are the worst of all. Boys clean glazed ware and carry it to the kilns, very dusty work. They sweep and dust printing shops, gather up lead scrap, tend the melting pots and clean the linotype plungers and often blow out the type cases. None of this work may be given to boys in European countries.

Girls are employed in a much greater variety of processes. They finish type by hand in foundries and they dust lead colors on linotype paper—two jobs that have been robbed of much of their danger of late by the improvement of machinery. They make small molded lead goods and they wrap objects in tin foil, which is really lead foil.⁹ Probably the worst lead work that girls and women do is in the potteries and tile works, where they act as dippers' helpers, finish ware, carry small ware to the kilns, and sweep the dipping rooms. Finishing ware means scraping off the excess glaze, usually after it is dry. The study made by the U. S. Public Health Service, to which I have already referred, shows that, in this industry, women contract lead poisoning in larger proportion than men and after a shorter exposure. The average period of exposure of the men who developed lead poisoning was seventeen years, but of the women only 9.3 years, although their working day was shorter. Among fifty-eight male ware carriers, there was no case of lead poisoning, but sixty-two women doing the same sort of work had a rate of almost 5 per cent. Among seventy-one male dippers' helpers, the rate of plumbism was 8.4 per cent, among 149 female dippers' helpers it was 14.4 per cent.

The number of cases of lead poisoning among American women is, if one can judge from the literature, extremely small. Gilman Thompson saw only one woman among 268 lead poisoning patients in New York, Edsall, none among the ninety-eight cases treated in the Episcopal Hospital in Philadelphia, E. E. Pratt, two in 109 cases of serious poisoning in New York City, the Illinois Occupational Disease Commission, only eighteen in 578 cases, which occurred in that state in 1909 and 1910. But the form that it takes in women when they do become poisoned is severer than in men. When I studied plumbism in the potteries, in 1911 I found a rate among the men of 8 per cent, and only one in seventeen of these men had had lead encephalopathy, among the women the rate was 14 per cent, and one in four and a half had had some form of encephalopathy.

FORMS OF PLUMBISM

The forms of plumbism differ much in the different industries, according to the severity of the exposure. In smelting, to a slighter extent in refining, in certain processes of storage battery making, in stripping white beds and emptying dry pans in white lead works, in grinding and packing oxides, in sandpapering white lead paint on wheels and bodies, or in small enclosures, such as ship cabins and the lavatories of Pullman cars, in mixing rubber compounds and working them up on the mills, in scattering enamel over sanitary ware and in paint grinding, the man may be exposed to large quantities of finely divided lead compounds, and his poisoning will develop rapidly and show typical symptoms, colic, encephalopathy, palsy. The same thing may hap-

pen in a neglected pottery, in a neglected machine shop where lead tempering is used, or in any place where an occupation not necessarily dangerous becomes so by reason of careless management. On the other hand, plumbism is likely to come on slowly and present a much less characteristic picture in painters, plumbers, makers of lead pipe, sheet and wire, printers, and dippers and kilnmen in potteries, tile works and terracotta works. In the course of the last twelve years I have secured reports of 131 cases of that supposedly rare form of plumbism, lead encephalopathy, taking that term in the sense in which Tanquerel first used it, to cover all forms of cerebral involvement in lead poisoning. These men and women came from the following trades: Lead smelting and refining, forty-two, white lead and oxid roasting, twenty-four, pottery and tile glazing, seventeen, of whom twelve were women and five men, painting, fifteen, enameling sanitary ware, ten, making storage batteries, seven, dry color grinding, three, mixing rubber with litharge, three, and one each from glass making, brass founding, making bearing metal, making sublimed white lead, printing, and cleaning stencils that had been used to letter freight cars with white lead paint. The remaining four were coroners' cases, men dying without recovering consciousness, and the only note as to their occupation was "lead worker."

All these, except one of the color grinders, the printer, and eleven of the fifteen painters, had the acute form of encephalopathy, ranging from a mild case, with headache, insomnia, disturbance of sight and transient mental confusion or momentary loss of consciousness, to the severe cases with delirium, coma, convulsions, death or recovery with mental impairment more or less lasting. In the case of the thirteen mentioned, the form was a slowly progressing mental deterioration, which in the color grinder seemed to be a part of his extreme cachexia, but in the others resembled general paralysis with arteriosclerosis. One of the four painters who had acute encephalopathy was a lad of 19 years, another had been on a sandpapering job inside for nine weeks, a third was a carriage painter, the history of the fourth could not be obtained.

In other words, the men and women who suffered from this peculiarly severe form of acute lead poisoning had all been exposed to lead dust or fumes in the air, as was noted by Tanquerel des Planches as long ago as 1836. Tanquerel,¹⁰ whose study of more than 2,000 cases left little to be added in the way of clinical observation, declared that he had never seen a case of typical, severe lead colic or encephalopathy which could not be traced to the breathing of fine lead dust or "lead emanations," and there are abundant confirmations of this statement in the literature of all those countries which take occupational poisoning seriously enough to seek for its sources.

We shall never adopt effective means of prevention of plumbism in industry till we accept the fact that the danger lies in the air the workman breathes more than in his personal habits. American industry is still largely dominated by the old idea that a worker acquires poisoning from the lead on his hands and that the way to protect him is to urge him to wash thoroughly before eating, laying special stress on the importance of scrubbing his finger nails. I have never been able to picture to myself just how the employer and the physician think the lead under a man's finger nails gets into his food. As a matter of fact, that source of poisoning

⁹ A few become skilled printers but among 1,532 linotypists I found only fourteen women and among 3,800 compositors, only 117 were women.

¹⁰ Tanquerel, L. *Lead Diseases: A Treatise from the French of L. Tanquerel des Planches*, translated by Samuel L. Dana. Lowell 1850.

is relatively unimportant. Men do not habitually suck their fingers, they eat only three times a day, but they breathe in the factory air some fourteen times a minute. A few weeks ago I watched a group of negroes emptying pots filled with freshly corroded white lead into an open truck, working in a fog of the white dust. The employer, to whom I suggested substituting modern methods, with enclosed trucks and extensible exhaust pipes, assured me that he had no trouble at all with these men, for he saw to it that they took a bath at the end of the day. The real cause for the apparent immunity from plumbism was revealed by the foreman, who told me that he tried not to keep any one gang longer than two weeks so as to avoid serious trouble.

CONCLUSION

Industrial lead poisoning has decreased in the last decade in proportion to the numbers employed, perhaps not absolutely, because so much more lead is used and so many more are exposed to it. We have learned much about its nature and its prevention, but we do not know much about its actual prevalence, and we do not carry out all our knowledge as to prevention. It is not yet treated with the same respect in medical schools as are such diseases as malaria and typhus fever and cholera, and yet, in our large industrial centers at least, it is certainly far more important than any of those. Perhaps it is at last coming into its own, and the next decade may see as much interest devoted to its detection and diagnosis and prevention as was given in former years to typhoid fever, with such excellent results.

RECENT INVESTIGATIONS OF ABSORPTION AND EXCRETION OF LEAD IN THE ORGANISM*

J. C. AUB, M.D., A. S. MINOT, PH.D.
L. T. FAIRHALL, PH.D.
AND
PAUL REZNIKOFF, M.D.
BOSTON

The poisoning caused by lead has been studied since very ancient times. During the last two or three centuries, plumbism has attracted particular interest because of its widespread occurrence. In 1616, Citois, a doctor from Poitiers, showed that the symptoms commonly known as the colic of Poitou were due to the use of bad wine treated with lead, and, in 1767, Sir George Bacon of England wrote an essay in which he traced the cause of so-called Devonshire colic to the use of lead in making cider. Stockhausen, about the middle of the seventeenth century, and several others, somewhat later, published excellent clinical descriptions of the disease, but the best and most accurate picture is that given by Tanquerel des Planches. His two volumes, published in 1834, contain material gathered from 1,200 cases of lead poisoning, and are so complete that later investigations have added little to the knowledge of the symptoms and signs of lead poisoning. Since 1840, the disease has been widely studied, and, during these more recent investigations, Annusshat,

Heubel, Prevost and Binet, Meillère, Erlenmeyer, and Legge and Goadby are probably the outstanding figures, except for such students of industrial conditions as Dr. Alice Hamilton and Sir Thomas Oliver.

Three years ago, an investigation was started in this laboratory for the purpose of throwing further light on the various mechanisms involved in plumbism. Though the literature on the subject is very full, it was soon clear that a majority of the fundamental physiologic problems of the disease were still for the most part unsolved because of contradictory, inaccurate or incomplete data. We have, therefore, carried out a series of investigations of the absorption, retention, and excretion of lead, and the mechanism of its action in the body, in order to obtain a full scientific picture of the disease as a whole. Since detailed discussion of the results would be long, I shall briefly sketch our findings here, and leave a more detailed account of the experiments and their significance to our other publications.¹

ABSORPTION

The relative amount and rate of absorption of lead from the gastro-intestinal and respiratory tracts have been the subject of much experimentation, and are important factors in the etiology of the disease. Up to a few years ago, the gastro-intestinal tract was always considered the principle path by which lead entered the organism. The Agenda of the International Labor Office of the League of Nations, in 1921, states that "the digestive canal is undoubtedly the most important" path of entry. "The respiratory canals have only a secondary importance in this connection, and even this is still contested."² We, however, soon found that when lead was given by stomach tube to cats, most of it could be promptly recovered in the feces. Later, it became clear that this occurs partly because most of the ingested lead is not absorbed, and partly because a greater portion of the fraction that is absorbed is caught by the liver and reexcreted into the intestinal tract in the bile. Therefore, much of the lead that enters the gastro-intestinal tract is not absorbed into the organism, but either is eliminated directly or never passes beyond the liver. Very large doses (50 mg. per kilogram three times a week) are required to poison a cat, when given orally, and must be continued for weeks before

1 These, to the present include

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*From the Laboratories of Physiology, Medical School of Harvard University and the medical clinic, Massachusetts General Hospital.

*Read before the joint meeting of the Section on Pharmacology and Therapeutics and the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

symptoms of intoxication appear.⁸ Absorption from the respiratory tract, on the other hand, is very rapid and dangerous. Blumgart,⁴ working in this laboratory, found that, within twenty-four hours, a relatively large quantity of lead could be absorbed by the organism when the only path of entry was through the nose and the mouth. This he did by tying off the esophagus, and by inserting into the trachea a cannula, through which the animal breathed. In such a preparation there is no connection between the respiratory tract and the lungs or stomach, and inhaled substances cannot enter the gastro-intestinal tract. Lead carbonate dust even though it is quite insoluble is rapidly absorbed when sprayed into the nose under these conditions. Blumgart determined this by analyzing the various organs of the body for lead.

Injection of lead into the trachea, and so into the lungs, of animals prepared in this way leads to similar results. Indeed, as much lead may be absorbed from one injection into the respiratory tract in one day as from gastro-intestinal exposure lasting for months.³ It is thus clear that lead can be readily absorbed from any part of the respiratory tract, and that this absorption is more rapid and therefore more dangerous than that from the gastro-intestinal tract. The degree of respiratory absorption is evidenced not only by the quantity of lead absorbed, but also by the rapid appearance of the lead line and other characteristic symptoms. The reason for the great rapidity of absorption from the respiratory tract is that, by this route, lead enters directly into the general circulation instead of passing through the liver, as in gastro-intestinal absorption. It thus reaches the more vulnerable tissues with greater ease.

We have made no study of absorption of lead through the intact skin. There is some evidence that this may occur, particularly in working with lead in oil, but the known cases are rare, and the degree of absorption must be extremely slight. The problem was recently investigated by Sussmann,⁵ who reported that lead is recovered in the urine after application on the skin with a fatty base, but his results are not really conclusive, because the quantity of lead absorbed by the body was not determined after death.

DISTRIBUTION

A series of experiments in this laboratory on subcutaneous absorption has shown that a redistribution of lead does occur, but slowly, and that, whereas a lead line and other signs of absorption of lead appeared before death, and small quantities of lead were found distributed through the organism after death, this solution and distribution is relatively slow, and probably always plays a very minor role in the etiology of lead poisoning. An analysis of 200 cases by Bonhoff,⁶ to determine the incidence of lead poisoning in veterans of the World War who still carry in their systems fragments of shell, indicates that plumbism is very rarely caused by such deposits of lead in subcutaneous or muscular tissue.

After lead is absorbed, it is carried chiefly in the blood plasma, and to a small extent in the red cells, as the tertiary phosphate.⁷ The concentration may be far higher than is possible in Ringer solution, because the

lead phosphate is so dispersed in the colloidal blood plasma that it does not precipitate. The results of the action of lead on the red cells are striking.⁸ This reaction must occur as the lead is absorbed, for lead phosphate is formed in the cells. This could not occur after lead had reached an equilibrium as colloidal lead phosphate in the plasma. The cells affected hemolyze less readily than normal cells in diminishing concentrations of Ringer solution, their surface shrinks, and they break up more readily than normal cells, they lose their power of agglutination, and have a surface which is less sticky than normal. All abnormalities are caused by the effect of lead on the red cells, which renders them hard, less elastic, and far more brittle than normal cells. Consequently, when these "lead" cells circulate in the body, with all the trauma attendant on passage through the capillaries, they break up rapidly in the peripheral circulation, and the anemia so commonly seen in lead poisoning develops.

Since lead is a cumulative poison, there must be some place in the body where it can be retained in fairly large quantities. This storehouse is the skeleton.³ The deposited lead is in the hard bone and not in the marrow, except for small traces in the bony spicules. Dr. Minot obtained clear proof of this by producing lead poisoning in chickens, and examining the so-called respiratory bone of the wings, which consists of a shaft without marrow. These bones contained relatively as much lead as did the other bones of the chicken, and therefore demonstrated that it is not the marrow that retains lead but the hard bone.

Dr. Minot found that during different stages of intoxication the distribution of lead within the body varies somewhat. If large quantities of lead are being taken into the body from outside sources or are being liberated from the bones, lead is distributed generally throughout the body, and the percentage in the bones is reduced. Under these conditions, acute symptoms of poisoning occur. If absorption is slower, then lead migrates to the storehouse in the skeleton, where about 95 per cent is held without harm during the chronic stages of plumbism. These facts are of practical importance in the pathologic diagnosis of lead poisoning at necropsy, when a relatively large percentage of lead in organs other than the bones points to a diagnosis of an active lead intoxication, whereas lead in the bones alone merely implies that absorption has occurred at some time during life, and that lead was stored, but that it was not the cause of severe symptoms at the time of death.

This deposition of lead suggests a mechanism similar to that involved in the deposit of calcium phosphate, and it therefore became of interest to investigate whether their excretion was at all parallel. Repeated observations have shown that under conditions which favor storage of calcium in the body, i. e., when there is a positive calcium balance, the excretion of stored lead diminishes, and that when conditions are unfavorable for retention of calcium, i. e., when there is a negative calcium balance, the excretion of stored lead increases.⁹

EXCRETION

But it has been found that even under normal conditions within the body there is a gradual excretion of the lead stored in the bones. Lead has been found in the stools of persons who have had no exposure for more

³ Minot A. S. Lead Studies V (Footnote 1)

⁴ Blumgart H. L. Lead Studies VI (Footnote 1)

⁵ Sussmann P. O. Beitrag zur Frage der Permeabilität der intakten Haut für Bleiverbindungen. München med. Wchnschr. 65 1407 1918

⁶ Bonhoff F. Ueber die Giftwirkung der Blei-Steichschüsse. Beitr.

⁷ Fairhall, L. T. Lead Studies IX (Footnote 1)

⁸ Aub J. C., Reznikoff Paul and Smith, D. E. Lead Studies, III (Footnote 1)

⁹ Minot A. S. and Aub J. C. Lead Studies XII (Footnote 1)

than two years, and Oliver reports finding it in the urine of a woman eleven years after exposure. There may be, therefore, an intermittent stream of lead entering the circulation from the bones, which is then gradually excreted.

Knowledge of the conditions favoring and hindering liberation of lead is, of course, of fundamental importance, for it is on this that the treatment of plumbism must be based. A careful study of the liberation of lead from bone and of its consequent excretion by the organism has therefore been made in this laboratory. Data show that during starvation the character of chronic lead poisoning changes somewhat, acute symptoms may develop, and at necropsy the absorbed lead is found distributed more generally through the body than is typical of the chronic condition. A decreased percentage is present in the bones, while the quantities in the liver, gastro-intestinal tract and other tissues are relatively increased. This suggested that during starvation there is something unusual in the metabolism of the body which sets lead free from the bones. Acidosis seemed the most probable explanation for the change, and an investigation based on this hypothesis was undertaken.

The object of the experiments was to produce acidosis artificially in thoroughly "lead" subjects by the ingestion of acid, and to observe the resultant changes in distribution and excretion of lead.¹⁰ It soon became evident that if acids are given in large quantities, particularly when the calcium balance is negative, the excretion of lead increases markedly.

A series of experiments was performed on cats that had absorbed lead from the lungs, but were no longer excreting lead when their diet was normal. With a milk-free diet containing very little calcium, these animals were given various forms of acid as medication—phosphoric, lactic and hydrochloric. Of these, the most efficient is phosphoric, probably because it can be taken in greater quantities than hydrochloric, and is not burned within the body as is lactic acid. Probably the agent that most efficiently liberates lead, however, is ammonium chlorid. As Haldane¹¹ pointed out, the ammonia changes to urea, and liberates hydrochloric acid within the body. Thus, one may ingest a large quantity of acid without drinking disagreeable quantities of acid. Of course, this procedure yields only an end-result and gives no hint of the amount of lead liberated from bone, carried through the body, and eventually replaced in the skeleton without being excreted.

The real reason for the increased liberation of lead during acidosis is probably the fact that lead in the form deposited in the skeleton—i. e., tertiary lead phosphate—is least soluble at the normal hydrogen-ion concentration of the body. This salt is more easily dissolved under either more acid or more alkaline conditions. Consequently, the ingestion of acid may in two ways favor liberation of lead. First of all, when the calcium content of the diet is low, acid calls on the reserve store of base in bone so that lead is liberated with calcium, secondly, the local change in the hydrogen-ion concentration of the bone renders lead more soluble—it is converted to the di-lead salt and released. Both phosphoric acid and ammonium chlorid with a low calcium diet almost invariably increased the excretion of lead from the organism.

TREATMENT

In treating patients with lead poisoning, the most satisfactory method now appears to be to give a diet with low calcium content, consisting of meat, potatoes, rice, macaroni, apples, bananas, sugar, salt, milk-free bread and butter that has been melted in hot water and skimmed off the top, to avoid absolutely milk, eggs, green vegetables, and fruits not included in this list. With this, either from 8 to 12 gm of ammonium chlorid is given daily, or ten doses of about 20 to 25 cc of dilute phosphoric acid so sweetened and diluted that it tastes like lemonade. A small amount of gm added to this phosphoric acid mixture makes it much more palatable.

Sodium bicarbonate taken by patients in quantities of 40 gm a day increases the excretion of lead. The average increase in the excretion of lead during ingestion of acid is fourfold, during ingestion of alkali, about double. All these treatments do not alter the amount excreted in the urine very definitely, the increase appears in the feces.

When acid is given and the calcium balance becomes increasingly negative, the excretion of lead tends to increase progressively, when alkali is given, however, although the calcium deficiency does not increase, the excretion of lead does. In this case, lead excretion is apparently independent of calcium excretion. Repeated observation has shown that, with a high calcium intake (positive calcium balance), lead excretion tends to diminish rapidly. This provides means for controlling the storage of lead in the organism. To increase excretion, it is only necessary to produce a negative calcium balance and to cause mild acidosis. On the other hand, to store lead in the bones so that it will not be free in the circulation and cause damage, it is only necessary to give a diet containing much calcium in the form of milk or calcium lactate. These facts account for the efficacy of milk in preventing toxic symptoms among lead workers. The milk produces a positive calcium balance, which favors relatively harmless storage in the body. It does not, as has been generally supposed, prevent absorption of lead.

Previous treatments for lead poisoning have consisted largely in catharsis and the use of potassium iodid. Catharsis has been known since the middle ages as excellent treatment for plumbism, and is the basis of the famous treatment for lead colic first used in the Charité Hospital in Paris, in 1602. Our experiments with magnesium sulphate as a cathartic have not demonstrated that it increases the excretion of lead when given alone. It does, however, relieve the spasm which appears to produce colic, for colic subsides as catharsis is established. Potassium iodid was first used in the treatment of lead poisoning by Melsens, in 1840, and has been employed ever since as an effective agent for increasing the excretion of lead. Many experiments with this drug have been performed in this laboratory, to determine whether it does or does not increase excretion of lead, and they have demonstrated that it does stimulate excretion. Indeed, ingestion of potassium iodid causes lead to appear in the urine and the feces, when they have been normal before its use, but it is not nearly as effective an agent as the various acids. Pouchet first pointed out that its effects are of relatively short duration, that the increased excretion of lead continues for a few days, and that then there is a distinct tendency for the rate of excretion to return to that maintained before potassium iodid was given.

10 Aub, J. C. and Minot, A. S. Lead Studies. XIII (Footnote 1).
11 Haldane, J. B. S. Experiments on the Regulation of the Blood's Alkalinity. *J. Physiol.* 55: 263 (Aug.) 1921.

Scattered through the literature are references to occasional cases in which symptoms of lead poisoning have been precipitated by various forms of medication long after exposure to lead. Oliver gives an instance of this after ingestion of potassium iodid. The only suggestion of the action of acid which we have been able to find in the literature was made by Sabrazes,¹² who mentions a case of lead poisoning, with colic and stippling of red blood cells, which developed, long after the removal from the lead hazard, as a result of taking an excess amount of the citric acid drink used so commonly in France. The explanation for such a tardy appearance of lead intoxication is clear in the light of investigations already mentioned in this report.

Untoward effects from our rather drastic therapy have not been observed in any of our patients, in spite of the fact that many of the subjects were very heavily "lead-ed." But in our cats, the rapid excretion of lead consequent to the administration of large doses of sodium bicarbonate was maintained for many weeks, and symptoms developed which were quite similar to those following overdoses of lead—progressive emaciation, lack of appetite, and general slovenliness. We have observed no such appearances in men, but this is not surprising, for, even in the midst of medication, the amount of lead liberated is probably much below that free in the blood during active absorption. This seems evident from the postmortem distribution found in fatal poisoning in animals and man.

We have here summarized part of our work of the last three years, although, of course many ramifications have been omitted. These and many experimental data will appear in other publications. In this paper an attempt has been made merely to describe briefly the methods of absorption, retention, and excretion of lead in the organism.

SUMMARY

Lead is absorbed more rapidly through the whole respiratory tract than through the gastro-intestinal tract. It is carried in the blood stream as a phosphate.

Lead is stored in the calcareous portion of the bones.

Damage results only when lead is being transported after absorption or following release from the bones.

In active plumbism, lead is distributed more widely through the body than in the chronic, inactive form of the intoxication.

The administration of acids or alkalis, particularly when associated with a low calcium intake, accelerates the release of lead and its excretion.

A positive calcium balance in the body favors retention of lead in the bones.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS SHIE, HAMILTON, AND AUB, MINOT, FAIRHALL AND REZNIKOFF

DR PAUL J HANZLIK San Francisco. My familiarity with the subject of lead poisoning is limited to the literature and to some experiments with lead on pigeons. The papers have given a good general review of this subject. There are two views regarding the nature of lead poisoning. One is that the poisoning is concerned with the accumulation of injuries from the continued passage of small concentrations of lead through the body, the other refers the poisoning to the accumulation of lead deposits in various organs. Both views are supported by what appear to be good experimental evidence.

Dr Aub appears to adhere to the notion pertaining to the accumulation of lead deposits. I believe it was claimed by certain French investigators a long time ago that lead is selectively deposited in bones, but in any review of the subject one finds all kinds of statements regarding the distribution of lead. Some claim that it is deposited to a greater extent in the liver, brain and kidneys. The variable results on distribution reported are probably explained, in part, by the employment of different and unreliable chemical methods, considering the extremely small quantities of lead involved, and, in part, by the choice of different species of animals. Certain French authors report the distribution to be quite different in man from that found in animals. If this is true, it is erroneous to transfer results obtained on animals to human beings. This appears to be one of the important difficulties in getting a good idea of the nature of chronic lead poisoning in man, and at the same time, of course, it is difficult to elaborate a satisfactory treatment. Straub and Erlenmayer made studies on chronic lead poisoning in cats, and found no selective deposits in the organs. When the administration of lead was stopped, the poisoning also stopped. They came to the conclusion that the poisoning was not concerned with deposits of lead in the various organs but was better explained by the accumulation of injuries from the continued passage of small amounts of lead through the body. They estimated the quantity necessary for symptoms of poisoning to be in the neighborhood of about 0.01 mg hourly, for about sixty days, in a cat. From what has been said, it is apparent that the testing of various agents used in the treatment of lead poisoning would be difficult but this has been attempted by a few investigators, and recently by Scremin of Padua. Iodid has been a favorite. Scremin tested the effects of iodid on artificial deposits of lead compounds and on their solubility, using chemosis as a test. He could demonstrate no beneficial influence of iodid and concluded that the clinical benefits from iodid are exerted in some way through an action on the metabolism. I wonder whether the beneficial effects of the acids and alkalis reported by Dr Aub might not be explained through an action on metabolism in somewhat the same way as has been suggested for iodid. I am not altogether convinced of the explanation given by Dr Aub. It appears to me that most of the therapeutic measures used in the treatment of plumbism still rest on an empiric basis, and that the nature of the poisoning is still not understood as far as man is concerned.

DR LMER R HAYHURST Columbus, Ohio. One point in the diagnosis of lead poisoning which I think is very practical and has not been touched on is the fact that we must remember that lead poisoning may come from three sources in practical life—industrial, cosmetics and drugs. Two of these, at least, show in the skin. Many workers in lead do not know it. Many of the compounds with which they work are labeled or have peculiar trade names so that it is not known to the man or the physician that they contain lead. This is equally true of cosmetics. Therefore, I would advocate that every physician keep on his diagnostic shelf a little bottle of 10 per cent solution of sodium sulphid, that he take a swab and smear this on the face, arm or chest of the worker or suspected patient—best on a spot not bathed frequently—and see whether the characteristic black sulphid discoloration takes place, indicating the presence of lead. Black sulphids other than lead are not apt to be found under the circumstances.

DR TORALD H SOILLMANN, Cleveland. I should like to ask Dr Aub to give us some idea of the quantity of lead that is mobilized by the acid administration and some idea of the ratio this bears to the quantity of lead that induces intoxication when there is daily absorption. I would also inquire whether during the acid administration any toxic symptoms have appeared. I recall a statement by Brouardel that with lead patients in the hospital he could, as a rule, bring on at will an outbreak of lead symptoms by giving salad that contained vinegar.

DR J BIRNEY GUTHRIE, New Orleans. It would seem rather unfortunate, in summing up the effects of chronic lead poisoning, if we omitted the subject of the tendency to abor-

¹² Sabrazes Bourret and Leger. Les hematies a granulations basophiles dans le saturnisme experimental et clinique. J. phys. et path. gen., Paris 2 941 946 1900.

tion occurring in women suffering from this poisoning Sir Thomas Oliver lays great stress on this

DR MARVIN D SHIE, Cleveland So far as abortion is concerned, there is no doubt at all that lead has a selective action on the generative system probably more marked in the female than in the male There is no question that dysmenorrhea is increased or produced, and that abortions occur more frequently among those women who are exposed to the lead hazard McCord has recently reported an interesting case of lead orchitis and, as I mentioned in my paper, oophoritis sometimes occurs

DR JOSEPH C AUB, Boston Most of the observations on distribution of stored lead have been done in isolated cases, and most of them with unsatisfactory methods The outstanding studies of Heubel, Prevost and Binet, Meillere and Erlennmeyer have not yielded data that thoroughly agreed, and therefore Dr Minot restudied the subject with the satisfactory chemical method devised by Dr Fairhall Her work, which will appear in the August number of the *Journal of Industrial Hygiene*, should settle the controversy and establish, what several others have already shown that lead is stored largely in the bones This is true after subcutaneous injections as well although Erlennmeyer did not discover it It is true also of man In seven necropsies, both acute and chronic cases, brought to us for diagnosis we have found the distribution to be similar to that found in animals The former divergent views are due to many poor observations Dr Hanzlik also questioned whether it was not the circulating lead, rather than the stored lead, that caused damage, as Straub and Erlennmeyer suggested We agree with that view, but a lead stream is maintained from the storehouses, as demonstrated by the long continued excretion If lead would stay indefinitely in the bones it would not be dangerous and we are not absolutely certain that it is better to try to get rid of it rather than to store it The final decision will develop from further investigations We can, however, tend to control its excretion The excretion of lead will be reduced on a high calcium diet A negative calcium balance will increase the rate At present, we try to reduce the lead stream in acute cases and give milk and calcium lactate until the acute manifestations have subsided We then increase the lead excretion by our various methods, and have never seen any symptoms develop in man which would suggest the production of acute manifestations This was true in even our severest cases It seems wiser to us to do this, for the late attacks which Dr Shie and Dr Hamilton have mentioned, should thereby be reduced Dr Sollmann asked two questions First as to the quantity of lead mobilized daily Usually, without treatment, the excretion is much less than half a milligram and very rarely more than that amount With treatment this amount is approximately increased fourfold, and, with a good reaction, a little more than 2 mg may be excreted Second, as to the minimal toxic dose for man, Legge has stated that 2 mg daily over a long period of time may produce poisoning We have made no experiments on this point, but Dr Hanzlik has investigated it in birds

DR EMERY R HAYHURST, Columbus, Ohio Painters have been using the starvation method of ridding themselves of lead poisoning Is that a good procedure?

DR JOSEPH C AUB, Boston The treatment is not a simple one However, it seems logical because it fits in with all our experimental evidence The patients take in about 0.1 gm of calcium a day but the excretion continues at the rate of 0.3 or 0.4 gm a day

THE APPENDIX IN RELATION TO, OR AS THE CAUSE OF, OTHER ABDOMINAL DISEASES*

CHARLES H MAYO, MD
ROCHESTER, MINN

In a consideration of the progress of medicine during the last four decades and the periods during which certain diseases, such as appendicitis, have been discussed, credit should first be given Reginald Fitz for his masterful paper of 1886 on appendicitis, which clarified the subject for the medical profession the world over After a number of years, during which the subject was discussed and various methods of palliation, treatment and operation were adopted, the mortality was greatly reduced and the safety of interval operations was recognized During this period, nearly all medical journals considered some phase of appendicitis in all their issues and then for a like period there was a dearth of interest and of articles on the appendix, and the discussion of the subject seemed to be finished Statements are made that the mortality rate today is higher than in 1910, and the journals are again publishing articles on diseases of the appendix The higher mortality rate is due to the fact that the younger generation of practitioners, who did not benefit by the early period of discussion, have not recognized the seriousness of such infections and therefore have not made haste to diagnose and operate early in these cases Too many operations are performed during the dangerous intermediate period between early and late infection, and possibly too much is attempted in the late operation when there is an abscess Thus the surgeons for each period must discuss the subject and clarify it for themselves, since human experience, which affords opportunity for progress, can be passed on only to a limited extent

In the discussion of appendicitis, the belief has often been expressed that an enormous number of persons must have died from the disease in the past But appendicitis was rare in past ages, it is a disease of modern life A soil has become engendered and been made susceptible to disease by changes in food that have developed within a few decades, undoubtedly having the same relationship to modern life as that which has possibly contributed a factor in the increased percentage rate of cancer The present age of evolution has rendered such vestigial structures as the appendix a source of danger, not only because of the acute and chronic diseases with which it may be affected, but because it is a source of focal infection, like the tonsils, whose function also is probably not as necessary now as in past ages

FOCUS OF DISEASE

The appendix as a focus of disease has long been recognized, and I wish here simply to call attention again to its diseases in relation to other abdominal diseases or as the cause of them One of the puzzling factors in abdominal diseases that is noted occasionally is the hyposensitiveness of diseased areas in the stomach, gallbladder and appendix, in view of the extent of the disease found on exploration or found in one of these structures during operation for other conditions, or on exploration to determine whether the appendix is

Permissive and Mandatory Health Laws—For the purpose of public health advancement a permissive law is superior to a mandatory one just as an affirmative law is superior to a prohibitory one if we view the shaping and promotion of health legislation as an educational process It is far easier to lead the public to a course of public policy than it is to drive them even though the former procedure may consume a longer period of time The use of a mandatory law can be justified only when there is a clear and unmistakable expression of public opinion in favor of drastic dealing with a given situation—R G Paterson *Hosp Soc Serv* 9 19 (Jan) 1924

* Read before the Section on Obstetrics Gynecology and Abdominal Surgery at the Seventy-Fifth Annual Session of the American Medical Association Chicago June 1924

diseased and is a causative factor in reflex gastric symptoms. The appendix is often removed at the time of an abdominal operation for other disease conditions, especially in pelvic operations performed through the abdomen. The appendix does not cause disease in the pelvis by the dissemination of organisms through the blood stream or by way of the lymphatic system, but it may cause disease in the pelvis by contact and adhesion if it is inflamed or by contact with pus if it has ruptured. Conversely, the appendix may be involved in pelvic inflammation and its resistance lowered. The former is also true of its relation to the right ureter, an inflamed appendix adherent to the peritoneum over the right ureter at the brim of the pelvis may lead to a pathologic condition with blood in the urine and to an erroneous diagnosis of renal disease. Acute or chronic abdominal lesions are often attributed to the appendix, thus, in one third of the cases of stones in the left ureter, associated with colics, the appendix is removed without relief, and in approximately two thirds of the cases in which there is a similar condition on the right side, the appendix is removed ineffectually.

TYPES OF INCISION

The foregoing leads to a consideration of the type of abdominal incision for operations on the appendix. Various statistical reports have been made, from time to time, which show that in from 8 to 24 per cent of cases no benefit is derived from appendectomy when it is performed for supposed appendicitis. In operating on children, the McBurney incision is satisfactory, in adults, a considerable percentage of such incisions are followed by inguinal hernia within from one to two years after the operation, because of muscular relaxation at the internal ring, probably due to injury of a nerve. In adults, a straight right median rectus incision is greatly to be preferred, as it permits exploration and is readily enlarged. McBurney's incision is not large enough for satisfactory exploration and it cannot be enlarged satisfactorily, thus the real cause of disease in the gallbladder, pancreas, stomach or duodenum, and occasionally in the pelvis, may be overlooked.

The work of Rosenow on the reproduction of appendicitis by bacteria taken from diseased appendixes shows that appendicitis is not caused by the infection of the colon bacilli, but usually by streptococci of much the same type as inhabit the crypts of tonsils and the apical abscesses of teeth. The inflammatory exudate becomes infected, secondarily, by the colon bacilli in cases of perforating abscessed appendix.

I wish to call attention to the danger of removing the appendix in extensive pelvic operations in which the separated adhesions and manipulations are so extensive that there is an opportunity for more than an ordinary amount of effusion of blood. Although slight with surgical care, in such cases the removal of the appendix affords opportunity for infection, and in such cases the cut appendix should be regarded much as an accidentally perforated colon would be. If it seems advisable to remove the appendix, it can be more safely accomplished eight days after the major operation. If the appendix is apparently not diseased or only slightly diseased, it had better be left alone in major operations in which large areas of the lower abdomen are traumatized. Removal in such cases shows bad judgment, which is proved only when the patient does not convalesce satisfactorily or dies from infection.

However, the appendix undoubtedly is the source of chronic infection in the upper abdomen, and, as a rule, should be examined and removed during opera-

tion on the gallbladder or on ulcers of the stomach or duodenum. If, in examination of the abdomen before operation for pathologic conditions other than appendicitis, the appendix is found to be much more seriously diseased than the symptoms had indicated, or if in operations on the chronic diseased appendix the condition is found to be much more extensive and serious than was expected from the symptoms, the appendix should be considered a possible focus of disease involving the upper abdomen, and the exploration should be extended to this region by increasing the length of the incision, which is possible if it is a right median rectus incision. So far as the patient is concerned, if he is chronically sick from gastric trouble with pyloric spasm, even if it is the result of reflex action from disease of the gallbladder or appendix, he is entitled to relief, and the greatest degree of permanent relief is usually best attained by surgery. If operation fails to confirm supposed disease of the gallbladder or ulcers of the stomach or duodenum, the appendix should be examined, as it may be the offender.

METALLIC MERCURY SUSPENSIONS

THERAPEUTIC RESULTS AND DELETERIOUS EFFECTS OF THEIR INTRAVENOUS AND INTRA- MUSCULAR INJECTION *

H N COLE, M.D., J G HUTTON, M.D.

JOHN RAUSCHKOLB, M.D.

AND

TORALD SOLLMANN, M.D.

CLEVELAND

Intravenous injections of suspensions of finely divided mercury were made by Fuerbringer¹ in 1880 for the purpose of studying the fate of mercury in the tissues of animals. With the aid of acacia and glycerin, he prepared a stable suspension in which the mercury globules were smaller than the blood corpuscles. However, such injections of suspended metallic mercury do not appear to have been tried clinically until recently, when a proprietary preparation of this character was introduced, originally under the suggestive name of "lueside," which has been changed to "merco-del." The manufacturers claim that this produces very striking therapeutic results, with absolute safety, without injury to the vein, in fact, without any objectionable features. Since this method of introducing mercury for therapeutic purposes is a distinct novelty, the claims require careful control, a task that was assigned to us by the Council on Pharmacy and Chemistry, to which the preparation had been submitted. The material was supplied by the manufacturers, through the secretary of the council, as two lots of the commercial ampules.

Merco-del is a fine trituration of mercury with glucose, in the ratio of about 1:5. The trituration divides the mercury into very minute particles—said to range "from half the diameter of a blood corpuscle" to the submicroscopic, and it also surrounds them with a film—whether of air, of mercury vapor, of mercury oxid or of surface electric charges is not known—which delays their running together when the powder is sus-

* This research was supported by a grant from the Therapeutic Research Committee of the Council on Pharmacy and Chemistry of the American Medical Association.

¹ From the department of dermatology and syphilology and from the department of pharmacology and therapeutics of the Western Reserve University School of Medicine and of the Cleveland City Hospital.
1 Fuerbringer P. Arch f path Anat 82 491 1880

pended in water. For clinical use, the contents of a commercial ampule (0.5 gm of mercury and 2.43 gm of glucose) are shaken with 50 c.c. of sterile distilled water. This forms a suspension, isotonic with blood plasma and containing 1 per cent of mercury. This suspension is strained through a pledget of cotton and is then to be rapidly injected into a vein. The quick manipulation is necessary because the mercury promptly settles out of the suspension, but it can be reincorporated by shaking. Mr. R. L. Howard of the pharmacology department has found that this separation can be materially delayed by the addition of 0.6 per cent of acacia, and presumably much more by higher percentages. Dextrin was less effective. The acacia could be incorporated in the powder and would probably be an advantage in the therapeutic administration, but it was not further tried because we had come practically to the end of the series before the improvement was suggested.

We therefore prepared and injected the suspensions strictly as directed by the manufacturers, except that the full course of ten doses was not always carried through, for reasons that will become apparent as we proceed. The manufacturers insist that the drug must be injected "twice weekly in steadily ascending doses until definite symptoms of mercury saturation appear", i. e., slight diarrhea or tenderness of the gums. The dosage may then be somewhat reduced. According to the original directions the injections began with 20 c.c. (equivalent to 0.2 gms of mercury), and increased by 5 c.c. (0.05 gm) with each injection until the full 50 c.c. (0.5 gm) was injected. This would ordinarily be reached at the seventh injection. The dose was then kept at this point until a course of ten injections had been given. The dosage may be modified according to circumstances, and recently the manufacturers advise starting with a somewhat smaller dose (from 10 to 15 c.c.), but if the full course is given, as originally directed, the patient receives a total of 3.95 gm of mercury in five weeks. It must be realized that this amount of mercury is much greater than the quantities introduced by the customary intramuscular injections. For instance, ten 1 c.c. injections of 10 per cent mercuric salicylate contain only 0.6 gm of mercury, or less than one sixth of the quantity introduced intravenously in a course of the metallic injections. The manufacturers claim that two hours after the injection nearly half of the suspended mercury is deposited in the liver, and the remainder distributed in other tissues. In any case, it must remain somewhere in the body for a long time, for while the excretion of mercury has not been studied for this particular form of administration, it is stated (Buchta) that the kidney cannot excrete more than 10 mg of mercury daily without serious renal irritation, which does not exist here. According to this, it would require at least a year, and probably longer, to excrete the mercury that was introduced at a single course of injections, and in the meantime the patients would be in constant danger of serious mercury intoxication in case the deposited mercury should be suddenly mobilized. It is not known whether or when such mobilization may occur, evidently, the metallic mercury must be convertible into an active form or there would be neither therapeutic nor toxic effects, but we are entirely ignorant of the rate of conversion and of the conditions that may influence this.

The propriety of introducing these large quantities of mercury without more knowledge as to their fate would have appeared dubious to us, but our doubts

were allayed by the assurance of the manufacturers that the absolute safety of the method had already been established by thousands of injections on patients. We regret that we cannot confirm these claims of safety, for in our series of nineteen patients with intravenous injections, there developed two cases of very serious ulcerative stomatitis, one of which terminated fatally, and this with doses well within those advised by the manufacturers. This toxicity varies greatly for different patients in an unexplainable, unpredictable and uncontrollable manner. We tried to circumvent the toxicity by reducing the number of injections, but found that this did not appear promising, because the therapeutic result was unsatisfactory unless the full dosage was approached.

A further very serious feature of the mercury injections consists in the injury to the vein. The manufacturers claim an entire absence of such injury, and it is true that the acute injury is much less than that caused by the soluble mercury salts. However, repeated injections produce more or less inflammatory changes, which render the vein unavailable for further injections. We have used every precaution to avoid these and have also attempted to vary the technic, but without success. Presumably, some of the mercury globules become lodged in the track of the needle and become irritant as they are gradually attacked and dissolved. This very objectionable feature prompted us to try intramuscular injection, but we quickly abandoned this as unpromising, because it showed toxic effects, uncertain absorption, and marked local irritation.

These unfortunate occurrences and our failure to control them have thrown a wet blanket on the enthusiasm that was naturally engendered by the marked therapeutic response. It may be that a better knowledge of the mobilization, excretion and other conditions that influence the toxicity may render the method available in the future, but at present the risks appear to us as too great to justify a continuance of therapeutic tests.

The significant details of the individual clinical histories are given later, but a brief systematic analysis, grouped according to therapeutic response, toxic phenomena and local irritation may usefully be introduced in this place.

THERAPEUTIC RESULTS

The therapeutic results were very promising in several directions. The effect on the spirochetes could be observed in twelve cases, eight of these were primary lesions that came to us very early and therefore were especially suitable for this purpose. The organisms disappeared in the following number of days after the injections were begun: one, one, three, four, four, four, five, five, six, six, seven, seven, a median of four and one-half days after the first, or a day after the second injection. In some cases, the organisms disappeared as rapidly as one may see with arsphenamin. This favors the view that mercury has a direct spirocheticidal action.

The effect on the clinical phenomena of the disease was likewise satisfactory in most cases. Usually, a primary lesion or secondary eruptions or mucous patches would heal almost as rapidly from the use of these injections as from the use of the arsphenamins—they certainly disappeared faster than after the use of most mercurials. In some cases, however, the response was not so rapid. Patient 15 had a chancre of the rectum, a proliferating and moist lesion, which showed little or no improvement after three injections and

rected only after the use of arsphenamin. Again, in Patient 2, who had patches in the mouth, the moist papules in the corners of the lips were still present and showing spirochetes after two injections. As a rule, however, the clinical reaction was excellent and even remained so for some time after the drug was stopped. Thus Patient 16, with a generalized, follicular eruption, showed excellent, rapid reaction to 0.75 gm given in three injections and remained free from symptoms for more than a month. A generalized follicular syphilid in Patient 17 cleared up after six injections, a total of 1.8 gm, and he remained free from symptoms for six weeks, when a small mucous patch developed on the tonsil. Patient 9, also with a secondary eruption, reacted at once to four doses, a total of 1.1 gm, and, aside from the continued positive Wassermann reaction, showed no symptoms one month later.

The effect of the drug on the spinal fluid findings is more variable, but generally satisfactory. Patient 2 had a spinal fluid cell count of 24 cells, the globulin tests were positive, and the Wassermann reaction was one plus in a dose of 0.1 cc, three plus in 0.2 cc, and four plus in higher amounts. After ten injections, with a total of 3.3 gm of mercury, this changed to a cell count of 5, the globulin tests were negative, and the Wassermann reaction was negative in all doses. In Patient 5, with a cell count of 510, the globulin tests were positive and the Wassermann reaction two plus in 0.1 cc, two plus in 0.2 cc, and four plus in higher amounts, he showed, after ten injections (3.85 gm), a cell count of 53, the globulin tests were negative, and the Wassermann reaction was negative in all doses. Patient 13, who had cerebrospinal syphilis, gave a Wassermann reaction of four plus in all doses, the globulin test was positive, and the cell count was 180. After four injections (1.1 gm), the cell count was 120, the globulin test was positive, and the Wassermann reaction was still four plus in all doses. This result was not quite so convincing, and yet was very good for four injections. In Patient 4, with a secondary eruption, the cell count increased after nine injections, 3.35 gm of mercury, from 12 to 20 cells, with no changes in the globulin test or the Wassermann reaction.

For the blood Wassermann reaction, the results were less convincing. The majority of the patients showed no change, and in two the reaction became more positive during treatment (Patient 3 after nine injections, 3.5 gm, Patient 14, one injection, 0.2 gm), and only two showed improvement (Patient 4 after nine injections, 3.35 gm, changed from two plus to negative, Patient 7, after nine injections, 2.95 gm, from two plus to negative).

Relation of Dosage to Efficiency—The systematic and local side effects of repeated administration prompted the hope that a smaller number of doses than that advised by the manufacturers would be successful, a hope that was stimulated by the disproportion in the dose of this, as compared with other forms of mercury. The opportunity for studying the question was afforded by the cases in which the injections were discontinued early, either because of the onset of salivation or because of fibrosis of the veins. These showed that one or two injections suffice to clear the primary lesion of spirochetes, but that the other phenomena are not controlled satisfactorily by less than six injections and that the best results are obtained only as the full dosage of ten injections is approached. The limited efficiency

of the shorter courses is seen in the following compilation, arranged according to the number of injections.

One Injection—Only one case was observed sufficiently long to be usable. In Patient 14, with a primary lesion of three weeks' duration, a definite folliculopapular syphilid developed, and the Wassermann reaction increased from two plus to four plus, seventeen days after the injection.

Two Injections—Patient 12, with a secondary eruption, patches in the mouth and moist papules at the corners of the mouth, became markedly salivated, but the lesions refused to heal and the spirochetes persisted.

Three Injections—Four cases were observed. The first, Case 10, is not available, since arsphenamin had to be given to control a Vincent's angina secondary to mercurial intoxication. Case 15, a primary eruption of the rectum, did not respond to the mercury. In Case 16, a generalized follicular syphilitic eruption was cleared rapidly and completely, but the chancre and phymosis were not entirely healed, the blood Wassermann reaction continued at four plus, and spirochetes reappeared in the penile lesion after a month. Patient 18 left the hospital too early for conclusions.

Four Injections—Three patients were observed. The first, Patient 11, developed mucous patches in the throat eighteen days after the last injection. Patient 13 was salivated when his spinal fluid was only slightly improved. In Patient 19, the skin eruption cleared satisfactorily and has not recurred (in a month). The Wassermann reaction remained positive.

Six Injections—Two patients were observed. Patient 8 died from mercurial ulcerative stomatitis during the treatment. In Patient 17 the eruption cleared satisfactorily and thoroughly, but a mucous patch developed on a tonsil six weeks later.

The patients who received a larger number of injections (Patient 1, eight injections, Patients 2, 3, 4 and 7, nine injections, Patients 5 and 6, ten injections) generally gave satisfactory improvement.

The therapeutic results may therefore be summarized as unfavorable with one and two injections, nonconclusive with three and four injections, good with six or more injections.

TOXIC PHENOMENA

Acute reactions were entirely absent. Especially notable was the absence of anaphylactoid phenomena—nitritoid reactions, hyperpyrexia, changes in white blood cell count—which are commonly associated with the intravenous injection of colloidal solutions. This is probably explained by the fact that the mercury particles are relatively large and not in the true colloidal state.

Renal irritation is generally either absent (nine cases, from three to ten injections, median four injections) or slight (a faint trace of albumin and a few casts, seven cases, from two to nine injections, median six injections). These would clear up in a day or two and reappear with the next injection. A "heavy trace" of albumin, with more numerous casts and red blood cells, was present only in the two cases (Cases 8 and 10, six and eight injections) in which dangerous or fatal stomatitis developed.

The phenolsulphonephthalein output was studied in Cases 2, 3, 4, 6 and 7 with the larger doses, it was practically normal.

Digestive symptoms were absent as a rule, or, if present, slight, they were notable only in two patients (Patient 4 after nine injections, Patient 10 after three

injections), in whom cramps and some diarrhea accompanied other serious mercury symptoms. The cramps did not persist. Nausea and emesis occurred only in the two cases of extreme mercurialism. One or two patients complained of malaise toward the end of the treatment, much as do patients undergoing other forms of mercurial therapy.

Stomatitis, marked by more or less salivation and swelling of the gums and tongue, occurred in most cases, but the dosage required to evoke these symptoms and the degree to which they occurred varied. After observation of the serious results in Patient 8, we were extremely careful to stop the injections as soon as even slight oral symptoms became manifest, but we found that the severe forms usually break forth in their full severity without warning, so that even extreme precaution does not guarantee against them.

Of the nineteen patients, five, or one fourth, showed no oral or other systemic toxic phenomena, the patients and the number of injections being: Patient 9, one, 14, one, 15, three, 18, three, 6, ten, a median of three injections. Two showed slight salivation or gingivitis: Patient 19, four, 3, nine, a median of 5.5 injections. Eight showed moderate salivation and edema, namely, Patient 11, four, 13, four, 5, five, 4, six, 7, six, 2, seven, 1, eight, a median of six injections. Up to this point the severity is fairly parallel to the median number of injections, although individual patients may show considerable tolerance, for instance, Patient 6, who had no salivation after ten injections. In fact, the first seven patients received from eight to ten injections each, without marked symptoms. But when we come to the more severe cases we find that these often occur after relatively few injections, for, in ascending order of severity, these cases occurred with the following number of injections: Patient 16, three injections; Patient 12, two; Patient 10, three; Patient 8, six. The symptoms of these deserve some further discussion.

Patient 16, who received three injections (0.75 gm.) in six days, four days later developed extensive edema of the gums and tongue, with some salivation. The salivation had subsided two weeks later.

Patient 12, who had two injections (0.5 gm.), two days later had swelling of the gums, edema of the tongue, and marked salivation, with a secondary swelling of the lymph nodes under the jaw. The patient developed a heavy trace of albumin and numerous casts. The condition cleared completely.

Patient 10, who was given three injections (0.75 gm.), following the third injection and without any warning developed severe stomatitis, which progressed to extensive necrosis of the entire inner side of the mouth. This was accompanied by diarrhea, abdominal cramps, emesis, headache, and a very heavy trace of albumin, numerous casts and red blood cells in the urine. The patient's condition was serious, but he gradually recovered after several weeks.

Patient 8, who received six injections (1.95 gm.), after the fifth injection complained that the gums were a little tender, but after the sixth injection (0.45 gm.), the gums and tongue suddenly began to swell, salivation became extensive, and the patient developed a skin eruption that we interpreted as mercurial. The stomatitis became necrotic, with a secondary invasion of Vincent organisms. The urine contained a heavy trace of albumin, casts and some red cells. No intestinal symptoms were observed. The oral necrosis progressed

notwithstanding the treatment, and the patient died in the fourth week after the last injection. The necropsy showed no lesions in the lower intestines, and the kidneys were not badly affected; it appears, therefore, that the lesions in this form of mercurial poisoning are localized mainly in the mouth.

We may add that Patient 20, with four intramuscular injections (0.7 gm. of mercury), also developed severe gingivitis, extreme salivation, and a superimposed Vincent's infection, and this although roentgen-ray examination showed that a great part of all four injections was still unabsorbed.

LOCAL IRRITATION

The manufacturers state that very numerous merco-dol injections have been made by many clinicians without injury to the vein being reported to them. Our experience does not agree with this, on the contrary, practically all the nineteen patients showed more or less local reaction. In eight patients (averaging three injections each), the reaction was so slight that no special note was made of it: Patient 9, one, 12, two, 10, three, 16, three, 18, three, 11, four, 19, four and 6, ten.

In six others it was recorded as slight up to the number of injections stated, a median of two injections, namely, in Patient 2, one, 4, one, 8, two, 3, four, and 5, eight. In nine the endophlebitis progressed to sclerosis and obliteration, if the injections were repeated, on the average, after four injections. The patients and the number of injections were: Patient 14, one, 2, two, 1, three, 15, three, 8, four, 3, five, 4, six, 17, six, and 2, seven.

In some patients the veins of both arms were put out of commission. The inflammation may set in within twenty-four hours after the first injection and cause considerable subjective discomfort.

We took every precaution to make the technic unobjectionable. Most of the injections were made by Dr. Hutton. The nature of the mixture precludes the use of very fine needles, but the needle was sharpened before each administration, the injection was made with different speeds, etc., all to no avail. The cause of the irritation is doubtless the deposition of a little of the mercury in the track of the needle. This is indifferent at the moment, but becomes irritant as it dissolves.

This local irritation is strikingly illustrated by two cases in which some of the injection was made into the perivascular tissue. In Patient 2, a local sclerosis, through which we attempted to make an injection, became inflamed and formed an abscess. In Patient 13 an injection was probably made in part into the sheath. This produced a very tender, inflammatory reaction, extending up the vein to the shoulder, where it spread into a hot and painful subcutaneous swelling, some 5 cm. in diameter. It threatened to break down, but eventually cleared up with rest and cold applications.

The local irritation is also illustrated by the insistent complaints of pain on the part of the patients who received intramuscular injection.

It is not comfortable to reflect on what might be going on in the tissues if each of the mercury globules that is distributed through them as the result of the intravenous injections were to set up a focus of irritation, such as we see at the site of injection and such as occurs also in the lungs when volatilized mercury is condensed there as globules.² This calls for more thorough histologic investigation than appears to have been made so far.

CONCLUSIONS

1 Intravenous injections of metallic mercury suspensions ("mercodel") produce marked therapeutic response, manifested by the rapid disappearance of the organisms from the primary lesion, prompt clearing of the secondary lesions, and improvement of the spinal fluid. These efforts start within one or two days after the first injection, but the condition relapses unless the treatment is carried further, more than six injections are required for satisfactory results.

2 The quantity of mercury introduced in a "course" is very much greater than that introduced by any other method. According to current conceptions, a large quantity of mercury would be expected to remain in the body for a year or longer.

3 The injections do not provoke amygdaloid reactions and appear to have relatively little effect on the kidneys and intestine, but they are likely to cause more or less stomatitis, which may flare up suddenly into very severe and fatal forms.

4 The repeated injections that are necessary tend to set up inflammatory reactions in the vein, of such degree as to be seriously objectionable.

5 Intramuscular injections present the same dangers and uncertainties as the intravenous and are markedly irritant.

6 Until the conditions that influence the toxicity are better known and controlled, the risks appear too great to justify the therapeutic use of these injections.

REPORT OF CASES

CASE 1—P. S., a man aged 31, had a penile lesion of two days' duration in which spirochetes were present in large numbers, the blood Wassermann reaction was negative. From January 31 to February 23 eight injections, a total of 26 gm of metallic mercury, were given. The patient had few or no symptoms in the way of elevation of temperature, amnesia, malaise, nitritoid reaction, etc. The white blood count varied from 7,400 to 8,000. Spirochetes disappeared in the lesion in seven days—two days after the third injection. Following the sixth injection, he developed a few hyaline and granular casts with a very faint trace of albumin. He had slight salivation after seven injections and definite salivation at the end of treatment. The chancre healed in fourteen days, after five injections. It was necessary to give the last three injections in the left arm, as the vein in the right arm had become sclerosed, an obstruction which apparently kept getting slowly worse as treatment went on. This process was quite hard though it gradually disappeared after four weeks. The patient was then given arsphenamin as it was not possible to follow him longer without treatment.

CASE 2—C. J., a man, aged 19, had a generalized follicular syphilid with moist papules on the perineum and scrotum. There was cerebrospinal involvement with a cell count of 24, the Wassermann reaction was two plus with 0.1 cc., three plus with 0.2 cc., and four plus with higher dilutions of fluid. The globulin reaction was positive. Spirochetes were present in large numbers in the condylomas. The patient was given nine injections, a total of 33 gm of metallic mercury, from January 5 to February 5. The patient's cutaneous lesions reacted very well to therapy and were practically healed after five injections, in fifteen days while the spirochetes were gone after four days, search being made for them daily. The central nervous system symptoms also reacted well, the cell count dropping from 24 to 5, and the Wassermann reaction to a negative in all doses, Feb. 18, 1924. The patient developed a very moderate salivation after twenty-one days in which he received seven doses, while the urine never showed more than a faint trace of albumin, which began at the same time. There was slight tenderness over the vein used after the first injection and slight induration after the second injection, forcing the use of the other arm. After five injections both arms were indurated and there was an abscess on the right. From then

on we had difficulty with the injections, and a portion of the sclerosed vein from the right arm was excised for examination by the pathology department, which reported that there was an absence of the lining endothelium of the intima. Both the intima and the media were greatly thickened, this thickening being due primarily to a marked proliferation of connective tissue. In part of the intima there was a deposit of black pigment part of which had a globular appearance, in others, it was fine and granular. There were wide strands of connective tissue throughout the media, and in some portions there was an infiltration of round cells. The vessels of the adventitia were slightly thickened. Under higher magnification there were also fine granules of pigment scattered throughout the media. There were a few areas of hemorrhage in the media.

The pathologic diagnosis was phlebosclerosis. A phenol-sulphonaphthalein test, February 9, resulted in the return of 30, 18 and 19 per cent, or 67 per cent.

The result of the treatment was excellent from the clinical standpoint but had from that of effect on the veins.

CASE 3—J. N., a man, aged 30, had a healed primary lesion of four weeks' duration nicely healed over. Spirochetes were found with great difficulty. He was given nine injections of mercodel, a total of 35 gm of metallic mercury, from January 11 to February 9. The lesion healed after seven injections while the spirochetes were gone after twenty-four hours though they had been hard to find. The patient developed a few hyaline casts in the urine after the sixth injection and became very slightly salivated. He showed a progressively stronger Wassermann reaction under treatment, it being three plus on admission and four plus seventeen days later, after five injections of mercodel. He developed a slight sclerosis of the vein used after four injections, which was marked after five injections and we were forced to use both arms. At the time of the last injection, the veins on the left arm were tender and could be palpated as cords running up to the shoulder. A specimen was removed for examination. The pathology department reported that the wall was greatly thickened, this thickening was most marked in the intima. The lining endothelium was intact. There was some increase in connective tissue in the media. The thickened intima encroached on the lumen reducing its size. There were no deposits of blood pigment found.

The pathologic diagnosis was phlebosclerosis. The phenol-sulphonaphthalein test, February 12, resulted in the return of 45, 20 and 9 per cent, or 74 per cent. There was a good clinical result, but a bad result on the veins.

CASE 4—J. O., a man complained of a primary lesion with condylomas on the scrotum and mucous patches in the mouth, there was cerebrospinal involvement with paralysis of the seventh nerve on the right side. The blood Wassermann reaction was four plus. The spinal fluid Wassermann reaction was negative, the cell count was 12, and the globulin test was positive. He received nine injections of mercodel, a total of 33.5 gm of metallic mercury, from Jan. 9 to Feb. 5, 1924. The spirochetes disappeared in twenty-four hours. The facial paralysis was somewhat better after two injections and quite cleared up after the ninth injection. The blood Wassermann reaction changed from four plus, January 12, to two plus, February 7, while the cell count on the spinal fluid rose to 20 cells and we felt it best for the patient to give him arsphenamin. He had only a very moderate salivation after six injections and developed a few hyaline and granular casts at the same time. At the time of the ninth injection he developed a slight diarrhea and cramps in the abdomen for two days. The phenol-sulphonaphthalein test, February 9, resulted in a return of 55, 18 and 9 per cent, or 82 per cent. We noted a slight infiltration of the vein after the first injection and it was sclerosed after the sixth, so that no further injections could be given in it.

The clinical result was excellent, but there was a poor vein reaction.

CASE 5—J. K., a man, aged 32, had a flat papular syphilid on the forehead and neck, alopecia syphilitica, leukoderma syphilitica, mucous patches in the mouth, and cerebrospinal involvement with a cell count of 510. The Wassermann

reaction on the spinal fluid in 01 cc was two plus, in 02 cc, three plus and four plus in higher dilutions. A test for globulin was positive. The blood Wassermann reaction was four plus. The patient received ten injections of mercoel, a total of 385 gm of metallic mercury, from January 5 to February 5. He developed only a very moderate gingivitis after five injections of the drug, and showed a few hyaline casts and a very faint trace of albumin after six injections. Clinically, the lesions were healed after five injections, and the spirochetes disappeared from the lip lesion after the fourth day and two injections. The spinal fluid Wassermann reaction changed to a negative in all amounts after ten injections, and the cell count dropped from 510 to 53. The blood Wassermann reaction remained three plus. At this time, because of his developing a frank leukoderma syphilitica on the neck, we thought it advisable to administer arsphenamin. Aside from a slight induration noted on his vein after the eighth injection, he had no other symptoms.

There were excellent clinical and serologic results.

CASE 6—F J, a man, aged 23, had a small papular syphilid of the follicular type. The Wassermann reaction was four plus. The patient received ten injections of mercoel, a total of 335 gm of metallic mercury. The eruption reacted nicely to therapy being totally cleared up after five injections. At no time did he show any reaction to therapy. The Wassermann reaction at the end of the course was four plus positive. No sclerosis of the vein was noted.

There was an excellent clinical result and there were no deleterious reactions.

CASE 7—P G, a man, aged 22 had a primary lesion of three weeks' duration, in which spirochetes were present in large numbers. The blood Wassermann reaction was two plus. The patient received nine injections of mercoel, from Feb 2 to March 1, 1924 a total of 295 gm of metallic mercury. Spirochetes disappeared after three days, and the Wassermann reaction on the blood was negative after nine injections. The patient showed no kidney reaction. He had an edema of the gums after six injections, which went away when the dosage was lowered slightly. There was slight infiltration about the vein on the right arm after the third injection, which later went down entirely. A phenolsulphonephthalein test after the third injection resulted in a return of 48, 15 and 9 per cent, or 72 per cent.

This was an excellent case in which to study the disappearance of spirochetes.

CASE 8—C T, a man, aged 24 had a primary eruption of three weeks duration, a bubo. Spirochetes were present in large numbers. The blood Wassermann reaction was four plus. He received six injections of mercoel, a total of 195 gm of metallic mercury, from January 11 to January 29. The spirochetes disappeared after five days the lesion on the genitalia gradually healing over. After four injections, he began to develop an induration of the vein on the left arm running up toward the shoulder, which became quite tender. The right arm also showed some sclerosis of the vein. Following five injections the gums were a little tender, and after the sixth injection of 45 cc his tongue began suddenly to swell, the gums became swollen, and there was extensive salivation. Along with this, the patient developed a symmetrical, sharply defined maculopapular, circinate eruption on the extremities resembling an erythema multiforme. The mouth condition became worse with necrosis of the tissues, and numerous secondary Vincent's organisms were found. The patient was treated for mercurial poisoning, but gradually became weaker and weaker the kidneys showing a heavy trace of albumin casts and some red cells. There were no bowel symptoms. He died, February 21. Necropsy revealed an ulcerative stomatitis congestion of the liver, kidneys and spleen with moderate emphysema of the lungs. Acute mercurial poisoning was followed by death.

Pathologic examination of a section of the vein revealed that a few areas showed absence of the lining endothelium of the intima. The wall was greatly thickened. This thickening involved both the intima and the media. The thickened intima encroached somewhat on the lumen, reducing the size of the lumen. There was a proliferation of the connective tissue throughout the media. In a few areas of the media,

there was a slight infiltration of round cells. In a few areas of the intima there were small deposits of black pigment. The vessels of the adventitia showed moderately thick walls. The pathologic diagnosis was phlebosclerosis.

CASE 9—The patient had a primary lesion of six days' duration. Spirochetes were present in large numbers. The Wassermann reaction was negative. The patient was given one injection of mercoel, 02 gm of metallic mercury March 7, 1924. The spirochetes progressively disappeared and were gone, March 11, the lesion healing over entirely. The patient was then put on treatment with arsphenamin.

This was an excellent case in which to study the disappearance of the spirochetes.

CASE 10—G G, a man, aged 32 complained of a primary infection on the genitalia a large flat, papular syphilid on the face, with a maculopapular eruption on the body and oral mucous membrane patches. The blood Wassermann reaction was four plus positive. The patient received three injections a total of 075 gm of metallic mercury, from March 13 to March 20. After the third injection, the patient, without warning began to develop an edema of the gums, tenderness and bleeding around the teeth, the salivation and edema involving the tongue. These symptoms quickly took the form of a severe necrosis of the entire inside of the mouth. This was accompanied by diarrhea and cramps in the abdomen, with emesis and headache, the urine showing a very heavy trace of albumin, numerous casts and red blood cells. The patient gradually recovered after several weeks.

In this case, acute mercurial poisoning was followed by recovery.

CASE 11—J D, a man aged 30, had a fading generalized rosacea syphilitica alopecia syphilitica and ptosis of the right eyelid. The blood Wassermann reaction was four plus. In the spinal fluid, the globulin test was positive, the cell count was 22, the Wassermann reaction was negative. The patient received four injections, a total of 11 gm of metallic mercury, from March 4 to March 17, at which time he developed a malaise along with a slight salivation and a definite edema of the tongue and gums. The urine showed some casts and a faint trace of albumin. Treatment was then stopped because of previous experience. Spinal puncture was performed the second time, March 27, the fluid being unfortunately, bloody. April 11 he developed an iritis and showed beginning patches on the tonsils. There were symptoms eighteen days after the last injection of mercoel. He was then put on arsphenamin and reacted nicely. There was no local reaction on the vein. The ptosis of the eye and the alopecia had cleared up in part on mercoel before the other therapy was started.

In this case there was recurrence after four injections of mercoel.

CASE 12—A A, a man, aged 27, suffered from fading rosacea syphilitica, with alopecia luetic, there were extensive oral mucous patches, especially in the corners of the mouth, and numerous scrotal lesions. The blood Wassermann reaction was four plus. He received two injections of mercoel, a total of 05 gm of metallic mercury, March 29 and April 2. Two days after the last injection he began to develop a swelling of the gums, marked salivation, and edema of the tongue. There was secondary swelling of the lymph nodes under the jaw. The urine developed a trace of albumin with many casts, which, April 7, became a heavy trace of albumin with numerous casts. The mouth lesions and kidney lesions gradually subsided by April 15, but some of the syphilitic lesions were still present, spirochetes also were present. He was then placed on arsphenamin. There was no local vein reaction.

This patient gave a poor clinical and bacteriologic result from therapy.

CASE 13—H A, a man, aged 31 had an infection of eight months' duration and received six injections of arsphenamin. The patient showed extensive mucous patches in the throat. The blood Wassermann reaction was four plus. The spinal fluid Wassermann reaction was four plus in all amounts, the cell count was 180. He received four injections of mercoel, a total of 11 gm of metallic mercury, from March 7 to March 20. Following the last injection, which was possibly deposited into the sheath, the patient developed a painful

swelling of the vein, which extended up to the shoulder, and spread out in the veins below the shoulder into a local, one-half palm sized area of inflammation which developed local heat, swelling and tenderness. The process gradually subsided in four weeks under rest and ice packs. The patient's mucous patches were completely healed after three injections, but he developed a definite gingivitis and salivation four days after the last injection, and, because of his vein condition and the spinal fluid findings, it was not deemed best to deny him arsenphenamin therapy further. The cell count on his spinal fluid, March 24, was 120 with the Wassermann reaction still four plus.

This patient gave a moderately good clinical result, but a very severe vein reaction.

CASE 14—L. M. aged 23 had a primary eruption of three weeks' duration. Dark-field examination showed many spirochetes; the blood Wassermann reaction was two plus. Following one injection of mercodol, 0.2 gm of metallic mercury, March 1, a sclerosis of the vein developed which was so extensive that the vein could not be used further. Dark-field examination showed the entire disappearance of the organisms after five days. The lesion healed entirely from the one injection. The patient was carefully observed to note the effect of this one treatment. The blood Wassermann reaction was four plus seventeen days later and we noted the beginning of a maculopapular eruption. He was then started on arsenphenamin therapy. The sclerosis of the vein later cleared up.

In this case there was recurrence following one injection of mercodol, there was extensive vein sclerosis from one injection.

CASE 15—W. H. a man aged 21, had a primary infection of the anus, a generalized maculopapular eruption and mucous patches over the genitalia. The blood Wassermann reaction was four plus. Spirochetes were present in large numbers. The patient received three injections of mercodol, a total of 0.75 gm of metallic mercury, from February 28 to March 7. By this time he had developed such a sclerosis of the vein that we were forced to stop therapy for a time and so used him to observe the effects of three injections. Spirochetes disappeared in seven days from the primary eruption, and the roseola was gone in four days. The patches and the primary lesion refused to heal, and two weeks after the last injection mucous patches were noted in the throat. The patient was then placed on arsenphenamin. The vein condition gradually cleared up. No salivation and no kidney reaction were noted.

In this case there were vein sclerosis and recurrence after three injections of mercodol.

CASE 16—J. H. a man aged 23 had an edematous primary eruption of the genitalia, gonorrhea, an annular papular syphilid of the face, a follicular small, papular syphilid of the trunk and leukoderma syphilitica. The blood Wassermann reaction was four plus. The patient was given three injections of mercodol, a total of 0.75 gm of metallic mercury, from March 12 to March 20. Spirochetes disappeared from the chancre in six days. March 24 he developed an extensive edema of the gums and tongue and some salivation. The syphilid had cleared up as well as it would have with arsenphenamin. April 8, the salivation was gone, but we did not think it best to use any more mercury. There were no renal or venous reactions from the injections. The blood Wassermann reaction was still four plus. The latter part of April the penis began to swell again, and spirochetes were found, one month after the last injection of mercodol.

This patient had a good clinical reaction after three injections of mercodol, followed with a recurrence.

CASE 17—W. B. a man, aged 22, complained of a generalized small papulofollicular syphilid. The blood Wassermann reaction was four plus. The patient received six injections of mercodol, a total of 1.8 gm of metallic mercury, from February 16 to March 4. He showed a definite salivation after the sixth injection of the drug and further therapy was stopped. The clinical result and the reaction were excellent and quite rapid. The blood Wassermann reaction remained four plus. Six weeks after the last treatment the patient developed a mucous patch on the right tonsil and we put him on arsenphenamin. The patient developed a gradual venous

sclerosis and after the sixth injection it was doubtful whether another dose of the drug could have been given in the vein which was sclerosed and could be palpated to the shoulder as a hard subcutaneous cord. Sclerosis, during the course of the next six weeks cleared up. There was no renal irritation.

This patient had a good clinical result from six injections of mercodol, with a recurrence six weeks after the last injection.

CASE 18—L. J. a man aged 21, had a dime-sized primary lesion of the genitalia of two weeks' duration. Spirochetes were present in small numbers. The patient received three injections of mercodol, a total of 0.75 gm of metallic mercury, from February 9 to February 16. The primary lesion was entirely healed after two injections. The spirochetes were gone on the sixth day after treatment was started and one day after the second injection. There was no salivation, renal irritation or venous sclerosis.

An excellent clinical result in chancre from three injections was shown in this case with a disappearance of spirochetes in six days. We were unable to hold the patient further.

CASE 19—J. M. a man aged 28, had a lenticular syphilid of the face and neck and a maculopapular eruption on the body. The blood Wassermann reaction was four plus. The patient received four injections of mercodol, a total of 1.1 gm of metallic mercury from March 13 to March 25. There was no renal irritation. The patient was definitely salvaged after the fourth injection and treatment was stopped. The cutaneous lesions cleared up nicely and quite rapidly.

INTRAMUSCULAR INJECTIONS

CASE 20—A white man, with four sharply defined pea-sized primaries on the glans with spirochetes present in all of them was given an intramuscular injection of mercodol, April 22 15 cc, 0.15 gm of metallic mercury, on April 26, 20 cc, April 29 25 cc, and May 6 10 cc, making a total of 70 cc, or 0.7 gm of metallic mercury. The lesions responded rapidly to therapy—they were dried up in four days. The spirochetes had disappeared by the seventh day and we considered this a very good clinical result. May 3, the patient showed a beginning salivation and slight edema of the gums. By May 9 this had become quite extreme. There was a severe gingivitis, an extreme salivation and a superimposed Vincent's infection. The process in the mouth went on to necrosis around the gums and broke over the right tonsil. The patient's condition remained almost at this level up to June 1, when he began to improve. Roentgenograms taken of the place where the mercodol injections were given in the hips showed a dark, stippled appearance, similar to that shown after mercurial (gray) oil, and to date, none of the four injections have disappeared, so that the first injection is still present five weeks after it was introduced.

This case gave an excellent clinical result, but there was extreme poisoning from four injections intramuscularly of mercodol. This is a surprisingly rapid mercurialism from the drug, yet it was not all absorbed five weeks after administration.

CASE 21—J. R., a man, aged 33 suffered from a small papulofollicular syphilid, numerous patches in the mouth, and moist papules over the scrotum. He received, from May 3 to May 13 three injections of mercodol intramuscularly, 10 15 and 20 cc, a total of 0.45 gm of metallic mercury. There seemed to be no improvement in the eruption, and the therapy was changed because he complained bitterly of pain from the injections.

CASE 22—E. W., a man, aged 19, had a primary lesion of the genitalia, a maculopapular, generalized eruption. A dark-field examination of the primary lesion was negative, the blood Wassermann reaction was four plus positive. The patient was given three injections of mercodol, 20, 25 and 20 cc, April 29, May 6 and May 13, a total of 0.65 gm of metallic mercury. May 8, notation was made that the syphilis was more papular than at the time of admission, but showed no benefit from the treatment. There was no salivation. May 16, the eruption had not cleared up under the treatment, nor was there any evidence of salivation. Roentgenograms of the injections showed them still present in the muscles and along the side of the spine in the lumbar region. The patient

showed but little salivation and complained of a generalized malaise and localized pain, so the therapy was discontinued.

This patient showed a poor clinical result in maculopapular syphilis from three injections of mercoel intramuscularly a total of 65 c.c. of the solution, or 0.65 gm. of metallic mercury.

CASE 23—C N a man, aged 25, had an extensive, generalized maculopapular eruption with grouped bean sized condylomas in the crural region. Spirochetes were present in large numbers over the condylomas. Because of our experience with Patient 19, we gave him an injection of mercoel, 10 c.c. in the left lumbar muscle, May 10, and 10 c.c. in the buttock, May 17, a total of 0.2 gm. of metallic mercury. Both injections were quite painful. Dark-field examination on the condylomas still showed numerous spirochetes. May 19, nine days after the first injection. The generalized eruption had cleared up partially but the local process had not decreased so much, though the condylomas were somewhat less moist in character. The patient showed no evidence of salivation, the urine was negative. Roentgen-ray examination showed shadows still present, May 23. Because of our experience with the first patient and because the organisms were still present we then started him in on arsphenamin.

In four patients treated by the intramuscular route with mercoel, several things are to be noted. The drug seems to be very painful. From this small series of patients it is impossible to predict a rate of absorption, and a patient may become severely salivated within a few days, yet the roentgenograms show the drug still to be present in the muscles, resembling the picture found after the use of mercurial oil. The therapeutic effect of mercoel intramuscularly is not so pronounced.

THE FOOD REQUIREMENTS OF MALNOURISHED INFANTS

WITH A NOTE ON THE USE OF INSULIN*

W. McKIM MARRIOTT, M.D.
ST. LOUIS

My object in this paper is to draw attention to the large food requirements of malnourished infants, and to discuss the means by which these may be met.

It is now generally recognized that a malnourished infant requires more food per unit of body weight than does a normal infant. There are a number of reasons why this is the case. It has been shown by Talbot¹ and others that the basal metabolism, i. e., the heat output per pound of body weight during rest, is greater in infants who are malnourished. Furthermore, the malnourished infant needs more material for growth if normal development is to be ultimately attained. This means that the malnourished infant must receive not only more total calories per pound, but also more of those elements, such as protein and mineral salts, which are essential for the construction of body tissue.

In the light of the foregoing considerations, it would appear that a malnourished infant would require almost as many calories, and as much or more protein and mineral salts, as a normal infant of the same age, but of considerably greater weight. This implies, of course, a much larger intake of food per pound of body weight. It has been our experience that very few malnourished infants do well unless they receive practically the same total amounts of food as normal infants of the same age.

It is usually stated that a normal infant of average weight requires a daily intake of food having a fuel value approximating from 45 to 50 calories per pound of body weight (from 100 to 110 calories per kilogram), and that the amount of whole milk needed to supply the necessary protein and mineral salts approximates 1½ ounces per pound of body weight, daily. In the case of an undernourished infant, we find that, if the infant weighs one half of what he should for his age, the total food requirement is likely to be in the neighborhood of 100 calories per pound (220 calories per kilogram), and the milk requirement somewhere in the neighborhood of 3 ounces per pound of body weight. These are optimal requirements. A malnourished infant may gain slowly on less but entirely satisfactory results are not often obtained unless the amounts of food indicated are given.

Unfortunately, a malnourished infant has a diminished digestive capacity, and it is not always possible to give such an infant sufficient food to meet his nutritional requirements. Attempts to meet the requirements with the use of ordinary sweet whole milk dilutions or cream mixtures are usually unsuccessful. Any form of feeding whereby the percentages of the different food elements are reduced below the amounts required for the normal infant is predestined to failure, as the feeding of such diluted mixtures in the small total volume taken necessarily results in a food intake below the requirements. Breast milk has a higher caloric value per ounce than most cow's milk formulas, furthermore, it is readily digestible. At times, however, the amount of breast milk that a malnourished infant will take is insufficient to supply the necessary number of calories. Furthermore, the protein content is low for a malnourished infant. The food value of the breast milk may often be increased to advantage by the addition of such a readily digestible carbohydrate as corn syrup, or by the addition of moderate amounts of dried milk. Both of these may be added to the milk without appreciably increasing its volume or decreasing its digestibility.

Cow's milk, acidified with lactic acid, and enriched by the addition of very considerable amounts of difficultly fermentable corn syrup, is also a readily digested food and of high caloric value. A discussion of the latter type of feeding is given elsewhere.² As between the methods mentioned, there is relatively little choice, and certainly still other methods of administering a sufficient amount of food may be used. The important point to bear in mind is that no matter what the method used, the total food intake must come up to a certain definite amount.

Some infants fail to gain even when the nutritional requirements mentioned above have been met, and, in these infants, it is necessary to resort to means for increasing the infant's capacity for utilizing food. The most effective means in our experience has been transfusion. It is our practice to give such infants repeated transfusions of matched citrated blood. The amount given at a transfusion is about 1 ounce of blood for each 3 pounds of body weight (20 c.c. per kilogram). Very often an infant will begin to gain following transfusion, even though the feeding is not changed.

Besides oral methods of administration of food, the intravenous method may be used. Glucose can be given intravenously in a 20 per cent solution, provided the

* From the department of pediatrics, Washington University Medical School and the St. Louis Children's Hospital.

¹ Read before the Section on Diseases of Children at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

² Talbot, F. B. Severe Infantile Malnutrition. Energy Metabolism with Report of a New Series of Cases. *Am. J. Dis. Child.* 22: 358 (Oct.) 1921.

2. Marriott, W. M. Artificial Feeding of Athreptic Infants. *J. A. M. A.* 73: 1173 (Oct. 18) 1919. Marriott, W. M. and Davidson, L. T. Acidified Whole Milk as Routine Infant Food. *J. A. M. A.* 81: 2007 2009 (Dec. 15) 1923.

injection is given slowly. The amount of the injection should be from one-third to one-half ounce of 20 per cent solution per pound of body weight (from 20 to 30 cc per kilogram). Glucose, given in this way, is only partly utilized, but if insulin is given at the same time, better utilization of the sugar occurs, and a gain in weight of the infant is the result. We were influenced in our decision to use insulin in these cases by the observation that diabetic patients on insulin treatment often gain weight at a phenomenal rate, even when the food intake is not excessive. There would seem to be a good theoretical explanation for this observed fact. The use of insulin in the treatment of malnourished infants has been recommended by others.³ We have found that the best results were obtained when considerable amounts were given. The method that has proved most successful in our hands has been the intravenous injection of a 20 per cent solution of glucose containing 15 units of insulin per hundred cubic centimeters. Such a solution has sufficient glucose to "buffer" completely the insulin, and we have observed no bad results. The injections may be given daily over a considerable period, and, in our experience, the results have been uniformly successful. A gain in weight almost invariably occurs, even in the case of infants

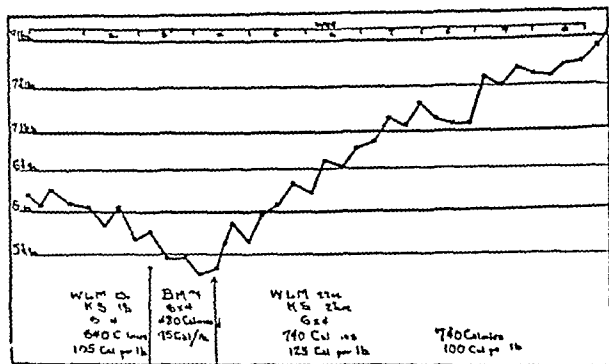


Chart 1—Weight curve and feeding history in Case 1

suffering from infections. The weight gained is not subsequently lost when the injections are finally discontinued. We have not used the insulin injection as a routine, but have reserved it for the most extreme cases of malnutrition or athrepsia. In some of the cases, we have felt that, except for this injection, the death of the infant would undoubtedly have occurred within a few days or hours.

REPORT OF CASES

The practical application of the principles outlined above can best be shown by a series of brief case reports

CASE 1—Although W O, aged 5 months, whose weight curve and feeding history appear in Chart 1, had a mild diarrhea on admission, he was not starved, but he was given a concentrated formula consisting of 23 ounces (680 cc) of whole lactic acid milk and 1½ ounces (45 cc) of corn syrup, six feedings of 4 ounces (120 cc) each. The stools became better on this formula, but there was no gain in weight, even though the infant was receiving 105 calories per pound (230 calories per kilogram). Breast milk was given for a few days, but loss of weight continued. It is interesting to note that the breast milk supplied fewer calories than did the lactic acid milk mixture. The feeding was then increased considerably, the formula being 22 ounces (650 cc.) of whole lactic acid milk with 2½ ounces (75 cc) of added corn syrup. This

gave a total of 740 calories, or 125 calories per pound (275 calories per kilogram). This amount of food was sufficient, and a steady gain in weight followed. The same formula was kept up for the remaining eight weeks during which the child remained in the hospital. This case illustrates very well the large caloric requirement sometimes necessary in malnourished infants. It is to be noted that the food requirement of a

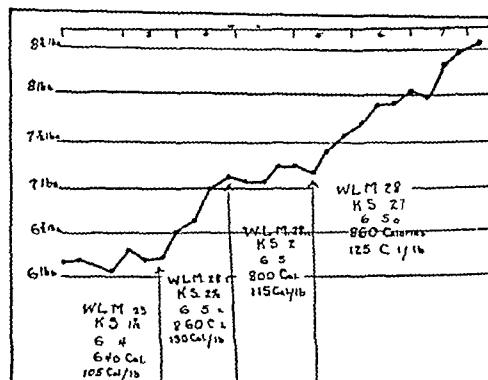


Chart 2—Weight curve and feeding history in Case 2

normal infant, 5 months of age, weighing 14 pounds (6.4 kg), would be 700 calories on the basis of 50 calories per pound and this infant failed to gain until he received at least this amount.

CASE 2—W K, aged 4 months, weighing 6 pounds (27 kg), was given a formula of whole lactic acid milk and corn syrup, having a total caloric value of 640 (Chart 2). On this formula there was practically no gain in weight. The amount of added sugar (corn syrup) was increased from 1½ to 2½ ounces (45 to 75 cc), and this increased the total calories to 860, or 130 calories per pound (286 calories per kilogram). Immediate gain in weight was the result. It was thought that this feeding might be unnecessarily large so one-half ounce of the sugar was omitted. During the following ten days there was no gain in weight. The extra half ounce of sugar was replaced, and a gain in weight again occurred. The stools were firm throughout the period of observation.

CASE 3—M W, aged 3 weeks (Chart 3), was fed on breast milk in fairly large amounts. No gain in weight occurred until a transfusion was given. Chart 3 is self explanatory. This case is illustrative of the fact that the utilization of food may be improved by increasing the blood volume and in that way, improving the circulation. Transfusion often brings

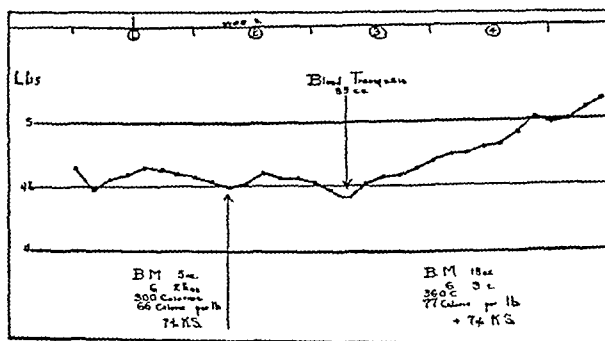


Chart 3—Weight curve and feeding history in Case 3

about the same results as are obtained by increasing the amount of food, and should be used whenever feasible

CASE 4—B, a premature baby, aged 1 day, weighing 3½ pounds (17 kg) (Chart 4), was unable to retain more than 1 ounce at a feeding. He was given six feedings of 1 ounce each of breast milk, but lost weight steadily. As a larger volume of food could not be given, the food value of the breast milk was increased by the addition of one-half ounce (15 cc) of corn syrup and one-third ounce (10 cc) of dried milk. This

3 Pitfield R L Insulin in Infantile Inanition New York M J
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almost doubled the caloric intake, and a steady gain in weight resulted. The volume of the feeding was later increased, although the character remained the same. Finally, at the age of 7 weeks, the feedings were changed to whole lactic acid cow's milk with added corn syrup and dried milk. This food was tolerated as well as the breast milk, and the gain in weight continued. This case is of especial interest, as it illus-

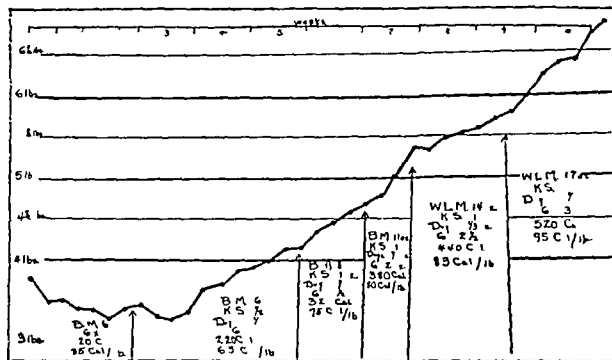


Chart 4—Weight curve and feeding history in Case 4

trates the fact that even a premature baby may be safely fed on large amounts of food in concentrated form. This infant received approximately 4 per cent of fat and as much as 15 per cent of sugar and over 35 per cent of protein. There were, however, no symptoms of indigestion.

CASE 5—B S was an undernourished infant, weighing 6¼ pounds (28 kg) at the age of 4 months, and had suffered from frequent infections. She was given a large amount of food, as indicated in Chart 5, but without gain. A daily injection of 100 cc of 20 per cent glucose was administered intravenously for six days, and 2 units of insulin given subcutaneously following each glucose injection. Still no gain in weight ensued. The amount of insulin was then increased to 15 units, daily, and this was given intravenously along with the glucose solution. During the next twelve days, the baby gained almost 2 pounds (09 kg). The glucose and insulin injections were then stopped, and the food intake was somewhat increased, as the child's appetite was excellent. The gain in weight, which started during the period of glucose and insulin injections continued steadily. In this case, the injection of glucose and insulin seemed very definitely to have initiated the improvement.

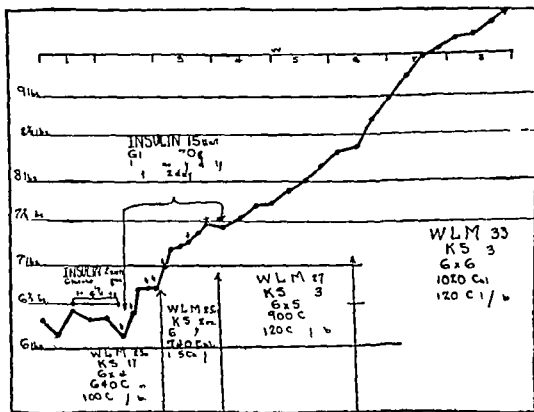


Chart 5—Weight curve and feeding history in Case 5

CASE 6—M Z, aged 2 months (Chart 6), was a poorly nourished infant suffering from bronchopneumonia, otitis media and pyelitis. As a result of the infections the infant developed a severe watery diarrhea, and lost more than 1 pound (05 kg) in weight during a period of three days. It presented the picture of 'intoxication'. This infant was receiving a skimmed lactic acid milk formula with 1 ounce (30 cc) of added corn syrup. The feeding was not discon-

tinued, but glucose and insulin injections were given in the same manner as in the preceding case. The effect of the injections was immediate, and the infant gained 1½ (07 kg) during the next ten days. The feeding was then increased. A continued gain in weight was the result. The infections cleared up, as might be expected, when the nutrition was improved.

CONCLUSIONS

- 1 The food requirements of malnourished infants are often extremely high, if calculated on the basis of weight.
- 2 Malnourished infants often require as much total food in the twenty-four hours as normal infants of the same age, but of much greater weight.
- 3 The large amounts of food required may be safely given, provided the food is of the proper type.
- 4 The nutrition may be rapidly improved by intravenous injections of glucose and insulin.

500 South Kingshighway

ABSTRACT OF DISCUSSION

DR JULIUS H. HESS, Chicago. As regards the administration of insulin intravenously in a solution of glucose I should consider that as an emergency measure when applied other

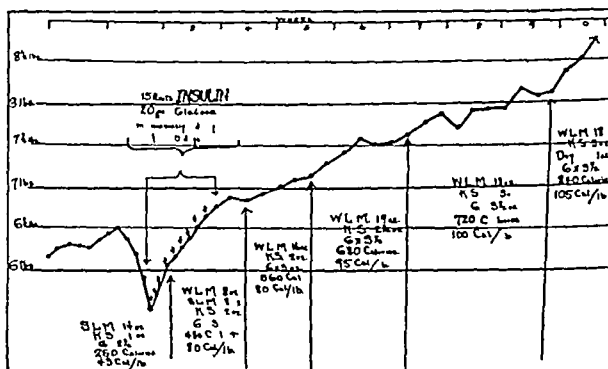


Chart 6—Weight curve and feeding history in Case 6

than in a hospital. Even when the undernourished, marasmic infant comes to the hospital, we have to be very careful at first, because we do not know how it will react. Dr Marriott gives no more insulin than will take care of the glucose put into the vein. I have had no experience with glucose intravenously, but we have had good results with its subcutaneous administration following intravenous administration of glucose. Even that has its risks, however, because infants have a very low blood sugar percentage, and insulin should not be given promiscuously. We must be very conservative in our intravenous therapy or we shall discredit insulin treatment. As to the stomach capacity of the marasmic infant, that is definitely lessened. Martin spoke of this in describing his diet on his recent round the world flying trip, which ended so disastrously for him. Martin and his mechanic lived for ten days on concentrated liquid food. They had three meals a day, allowing only 1-2 drams per meal during the last eight days of their wanderings in the arctic region. On the tenth day they reached a cabin and in this they found flour, baking powder and smoked salmon. They thought it would be wonderful to have flap jacks, so they made twelve expecting that they would be very hungry. They found that the best they could do was to eat two apiece. The stomach capacity was so restricted that they could not take more food. This is also the case in marasmus and for that reason we have to give small feedings, highly concentrated. The stomach capacity gradually increases under careful dietetic therapy.

DR W. M. MARRIOTT, St. Louis. I am glad Dr Hess sounded a warning against the use of insulin unless well buffered by sugar. Malnourished infants often have a low blood sugar, and if insulin should be given without the administra-

tion of large amounts of sugar at the same time, serious consequences might result. Insulin is given as an emergency measure. The first thing to do with a malnourished infant is to give a transfusion to increase the tolerance for food. Food should then be given enterally, if possible, and intravenously, if this is not possible.

THE CASE AGAINST GASTRO-ENTEROSTOMY*

DONALD C. BALFOUR, M.D.

ROCHESTER, MINN.

The operation of gastro-enterostomy, since its introduction by Wolfier,¹ in 1881, has proved of such value that no other operation or treatment for lesions of the stomach and duodenum compares with it in general usefulness, and it is doubtful whether any other treatment for any surgical condition has, in the aggregate, afforded so great relief of symptoms. Many types of operation have been devised for the treatment of peptic ulcer, and while some are efficient in selected cases, not one has attained such widespread popularity as that of gastro-enterostomy. The recent advocacy by distinguished surgeons of Great Britain and Europe of methods more radical than gastro-enterostomy in the treatment of peptic ulcer has raised in the minds of many surgeons the question of whether or not the best possible results are being obtained by such procedures.

Since the only basis for procedures other than gastro-enterostomy lies in the claim of their better end-results, it may be desirable to anticipate the publication of the end-results of these more radical methods by restating the end-results of gastro-enterostomy, at the same time considering its failures and the cause of these, and, finally, outlining the indications for and against the operation. This review is based on the results of gastro-enterostomy in cases of duodenal ulcer only, the consideration of its employment in cases of gastric ulcer and gastric cancer are reserved for a subsequent paper.

The results of gastro-enterostomy for chronic duodenal ulcer are characterized by a striking uniformity in statistics when the operation has been performed on proper indications. In large surgical clinics where gastro-enterostomy is the operation of choice for chronic duodenal ulcer, satisfactory results are reported in from 80 to 90 per cent of cases. The London surgeon Sherren² said recently that, in a series of 500 cases, 92.6 per cent of the patients were perfectly well two or more years after operation. He also made the important statement that "patients who go for two years without symptoms never develop them later." Enthusiasm for a certain type of operation or treatment occasionally leads to a curious tendency to disregard the results, or to obscure them by including cases in which poor results were the natural sequel to a gastro-enterostomy improperly performed, or made on a stomach innocent of a lesion that would justify any operation.

This report of the results of gastro-enterostomy for duodenal ulcer and its complications is based on reports of the present condition of 1,000 patients on whom the operation had been performed for duodenal ulcer in the Mayo Clinic more than ten years ago. A lapse of

ten years is more than a fair basis on which to compute the end-results of any treatment for peptic ulcer, and the reports serve to show not only the degree and permanence of the relief from symptoms, but to what extent the operation protected the patient from subsequent ulceration or its complications.

Pain is the predominating symptom of ulcer, and it is usually the symptom for which relief is sought. In the 1,000 cases studied, 986 patients had complained of pain before operation, only ninety reported the return of pain in any degree of severity, and only twenty-two of these considered it sufficient to return for reexamination. Vomiting was a symptom in 611 cases before operation, and the reports show a recurrence in only twenty-five cases. Hematemesis, melena, or both, occurred in 286 cases before operation. The recurrence of these symptoms has been reported in fifty-seven cases (5.7 per cent). The effectiveness of the operation in preventing further ulceration is shown by the fact that only thirty-five instances (3.5 per cent) of recurring ulcer, whether in the duodenum, stomach or stoma, are known to have developed. Experience justifies the assumption that these data represent very closely the incidence of recurrence, since a period of ten years or more would give ample time for reactivation of an old ulcer, or the development of a new one, and for the patient to seek relief by reexamination and treatment. The protection against subsequent perforation is apparently absolute, since not a single case has occurred among these 1,000 patients.

A compilation of the end-results in this series of cases shows that, in 88 per cent of the patients, relief from the symptoms for which operation was performed has been satisfactory. These patients, moreover, were operated on at a time when little or no effort was made to carry out any hygienic regimen after operation. The patients returned to former habits of living, and, in several instances, disturbance in digestion has been directly attributable to gross indiscretions in diet, or to other excesses. In such a group, therefore, the results of gastro-enterostomy are even more impressive than if the operation had been followed by a reasonable dietary regimen.

One of the most interesting and important facts concerning the results of the surgical treatment of duodenal ulcer was brought out in the investigation by the Actuarial Society of America,³ in which it was shown that the expectation of life of patients who had had gastro-enterostomies for duodenal ulcer was slightly better than that of a general population group of similar age and sex.

The operative mortality from gastro-enterostomy for duodenal ulcer, including its complications, acute and chronic, is under 2 per cent. During the period in which this study was made, there were twenty-eight deaths in 1,610 cases, a mortality of 1.11 per cent. This approximates the minimal mortality rate for any operation in the upper abdomen, since such operations are associated with definite risks of pulmonary complications superimposed on those incidental to any abdominal operation. There is a pulmonary morbidity of about one in fifty cases of upper abdominal operations, and a mortality of one in 200 directly due to pulmonary complications. Advances in methods of anesthesia, such as the introduction of ethylene, have minimized but not abolished such dangers, and, although gastro-enterostomy carries as low a risk as any other operation

* Read before the Section on Surgery, General and Abdominal at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

¹ Wolfier A. quoted by Finney (Footnote 6).
² Sherren J. *Disease of the Stomach and Its Surgical Treatment*, Lancet 1. 477 481, 1924.

³ Hunter A. *Gastric and Duodenal Ulcers Mortality After Operation*. New York, Knickerbocker Press, 1919.

in the upper part of the abdomen, the indications for it must take into consideration this small, but definite, operative risk.

FAILURES FROM GASTRO-ENTEROSTOMY IN CASES OF DUODENAL ULCER

In considering the failure of gastro-enterostomy to bring about complete and permanent cure, it is unnecessary to discuss those cases in which the operation should not have been performed. It is always the good thing which is abused, and gastro-enterostomy is still being performed when no ulcer exists or when some other type of operation would be more suitable. As Moynihan says, "Its very success has been against it." In the Mayo Clinic, we have disconnected more than 300 gastro-enterostomies, a large number of which had apparently been unnecessary. Fourteen of these ill advised gastro-enterostomies had been performed in the Mayo Clinic during the early period of gastric surgery.

Exclusive of this group of frankly unnecessary gastro-enterostomies, however, there are many and varied factors that may interfere with the satisfactory recovery of the patient and a good ultimate result. No operation will absolutely insure the patient against minor digestive disturbance later. Moreover, the surgeon should never lose sight of the fact that, in the majority of patients complaining of disturbances in digestion, no lesion of the stomach can be demonstrated, and the symptoms are either functional, or dependent on lesions elsewhere in the body. Failure of gastro-enterostomy to relieve symptoms is usually dependent on one or both of these factors. Functional gastric disturbances are not infrequently associated with the symptoms of chronic duodenal ulcer, and it is not only difficult, in those cases in which an ulcer is known to be present, to differentiate the two syndromes, but it is even more difficult to predict to what extent the healing of the ulcer, by operation, will relieve all the symptoms of which the patient complains. It has been shown by many observers, and it is confirmed in this series of cases, that, in the majority of the few cases in which a satisfactory result is not secured from gastro-enterostomy, the ulcer for which the operation was performed has completely healed, and the cause of the symptoms, whether organic or functional, is found to be extrinsic to the stomach. Failure to detect and deal with lesions elsewhere, particularly lesions that are known to have a causal relationship to peptic ulcer, has been responsible for some of the disappointments. This point is well illustrated by the fact that in the 1,000 cases studied, the majority of the cases in which complete relief from symptoms had not been obtained occurred in the 126 cases in which the appendix had not been removed at operation. The responsibility may also rest with the patients, as they are often tardy in following instructions for the removal of septic foci in the teeth or tonsils, or neglect them altogether. The result of gastro-enterostomy may also be disappointing in cases in which there was, at the time of operation, serious disability from pulmonary or cardiovascular disease, in such cases, the operation may be ill advised.

Failure to recognize or to deal correctly with the more serious complications of ulcer may be followed by unnecessary morbidity or mortality. As an example, there is a group of cases in which disturbances of motor function of the upper gastro-intestinal tract have given rise to severe toxemia, which may go on to gastric tetany, toxic nephritis, and, if not relieved, to death. Such cases, although rare, are most important, since it has

been shown that early recognition of the condition is possible by studies in chemistry, and that proper treatment is effective. Such cases have been reported occasionally, and a group observed in the Mayo Clinic has been reported by Brown, Eusterman, Hartman and Rowntree.⁴

McVicar⁵ has recently summarized thirty cases of this type, particularly from the standpoint of the clinical and laboratory findings, and the part blood chemistry plays in diagnosis, prognosis and treatment. The important points are (1) a clinical picture of vomiting, evidences of dehydration, tetany-like manifestations, and features of shock and uremia, and (2) changes in blood chemistry, including (a) high nonprotein nitrogen content (blood urea), (b) low chlorids, and (c) a high carbon dioxide combining power of the plasma and an invariable tendency toward alkalosis. The administration of alkalis under such circumstances is clearly contraindicated, and successful treatment is based on systematic gastric lavage and the administration of water, glucose, and particularly sodium chlorid. The effect of such treatment is most striking, and it is a distinct advance in the management of cases preoperatively and postoperatively.

Among the other more important causes of a disappointing result are (1) a young patient, (2) a short and atypical history, (3) the "constitutional inferiority" type of individual, (4) a small ulcer without obstruction, (5) development of pathologic conditions extrinsic to the stomach, giving rise to reflex gastric syndromes, (6) bad habits of living, and (7) unremoved foci of infection. Imperfect results may also depend on errors in technique or judgment in connection with the operation itself, for example, failure to remove the ulcer when removal is indicated, too short or too long a loop, the management of adhesions of the proximal loop to the mesocolon, too small an opening or one not properly placed, failure to close the mesocolon snugly around the stomach at a sufficient distance from the gastro-enterostomy, twists in the anastomotic loop, and unnecessary trauma. Although these possible causes of failure are numerous, they are largely avoidable, and, since excellent results have followed gastro-enterostomy when many of these causes of failure were not avoided, even better results will follow when they are avoided.

AVOIDANCE OF FAILURES

The first and most important rule for the avoidance of failure is to be certain that proper indications for the operation exist. The ulcer must be demonstrable by inspection or, if on the posterior wall, either by palpation or by direct inspection through an opening in the anterior wall of the stomach or duodenum, or both. In cases in which a diagnosis of ulcer has been made by a competent roentgenologist, and the surgeon is unable to demonstrate an ulcer by inspection or palpation, it is necessary to explore the duodenum from within, since, in certain cases, a hidden ulcer of the posterior wall can be detected only by visualization. There is no doubt that these posterior ulcers are much more common than we have believed, they are usually associated with a scar on the anterior wall, which is the only lesion recognized. The more extensive the lesion, the wider the extraduodenal inflammatory changes, the more marked

⁴ Brown G. E., Eusterman G. B., Hartman H. R. and Rowntree L. G. Toxic Nephritis in Pyloric and Duodenal Obstruction. Renal Insufficiency Complicating Gastric Tetany. Arch. Int. Med. 32: 425-455 (Sept.) 1923.

⁵ McVicar C. S. A Discussion of the Clinical and Laboratory Findings in Certain Cases of Obstruction in the Upper Gastro-Intestinal Tract. The Role of Blood Chemistry in Diagnosis, Prognosis and Treatment of This Condition. Am. J. Med. Sc. to be published.

the obstruction, the higher the gastric acidity, the longer the duration of symptoms, and the greater the disability of the patient, the more definite are the indications for gastro-enterostomy, and the more certain its results. It is a curious anomaly that in cases of chronic duodenal ulcer, late operation is followed by better results than early operation. Accordingly, the results are not so certain if a patient has had mild symptoms of short duration, low acids, and a small uncomplicated lesion, and if the stomach is small. Such cases, from a technical point of view, are satisfactory for local excision of the lesion, with or without pyloroplasty, but experience in the Mayo Clinic has shown that the end-results with these procedures are not definitely better than with gastro-enterostomy. A higher percentage of satisfactory end-results could be obtained in these cases if surgical treatment were postponed until the indications for it became more definite.

There is, therefore, an optimal time for operation for duodenal ulcer. In the majority of cases it is when the patient is first seen by the surgeon and the diagnosis made. When certain complications exist, however, a more favorable time may be selected. Hemorrhage from ulcer rarely, of itself, justifies an emergency operation, and surgical treatment should be deferred until the patient recovers from the effects of the hemorrhage. If a secondary hemorrhage occurs, however, a transfusion should be performed and the operation carried out immediately. Whatever risk is associated with such treatment is justifiable, since a secondary hemorrhage in such cases usually presages a third, and the ultimate death of the patient from further recurrences. The toxemia of obstruction, the necessity for its early recognition, and the value of preoperative preparation have been mentioned.

The second rule is that the operation shall be performed properly. Of the many important details in the performance of gastro-enterostomy, the following may be emphasized:

- 1 A large opening should be made at the most dependent part of the stomach. The importance of a large anastomosis cannot be overestimated. As the ulcer heals under the effect of the gastro-enterostomy, the pyloric spasm is relieved, the pylorus functions more readily, and there is a tendency for the new stoma to contract. This may reach a point at which it does not serve a real purpose, and there may be a reversion to the same condition that was present before the gastro-enterostomy was performed, with a possible reactivation of ulceration. The opening should be large enough, therefore, to anticipate such contraction. If a small stomach, adhesions or an anatomic anomaly do not permit a large opening, and the duodenum can be mobilized so that a satisfactorily large pyloroplasty or gastroduodenostomy can be performed, the latter may be employed. Anterior gastro-enterostomy, particularly when combined with entero-anastomosis, is a more useful substitute for posterior gastro-enterostomy than is generally believed.

- 2 The proximal loop of jejunum should not be too short. A malfunctioning gastro-enterostomy may be due to a proximal loop so taut that when contraction of the stomach occurs, the anastomosis is twisted by rotation of the stomach, with sufficient jejunal kinking to produce an obstruction of either afferent or efferent loops, or both.

- 3 The segment of stomach surrounding the anastomosis should funnel on all sides to a distance of at least 2.5 cm. below the opening in the mesocolon, and the

edges of the latter structure should be sutured snugly to the stomach, particularly in those cases in which there is an excess of fat in the mesocolon.

PROTECTION AGAINST SUBSEQUENT HEMORRHAGE

Hemorrhage following gastro-enterostomy may be immediate or remote. Serious hemorrhage from the anastomosis must be regarded as a technical blunder for which the surgeon assumes responsibility. Hemostasis can be made as certain in a gastro-enterostomy as in any other surgical procedure. If the suture line has been made secure in this respect and gross hemorrhage occurs postoperatively, it is due either to an unremoved ulcer or to causes extrinsic to the stomach. The incidence of hemorrhage from unremoved ulcer during the immediate convalescence of the patient is so small that no special measure carried out as a routine is warranted to prevent its occurrence, but, whenever the ulcer is reasonably accessible, it should be removed.

Hemorrhages remotely subsequent to operation may be due to reactivation of the original ulcer, an overlooked ulcer, a new ulcer in the duodenum, stomach or stoma, or causes extrinsic to the stomach. Careful examination of the patient will usually reveal the cause of these hemorrhages, and surgical treatment will satisfactorily deal with it, whether it be a lesion of the stomach, duodenum or stoma, a diseased appendix, gallbladder or spleen, or some infectious focus, particularly in the teeth or tonsils. Hemorrhages may rarely recur persistently, however, when every recognizable cause has been eradicated, such hemorrhages have usually been due to hepatic cirrhosis.

RECURRENCE OF ULCER AFTER GASTRO-ENTEROSTOMY

The recurrence of ulcer after gastro-enterostomy or, in fact, after any type of operation is apparently directly associated with failure to reduce the acidity, to maintain this reduction, and to provide adequate drainage. Sherren has recently reported a series of cases which strikingly illustrate this fact. He made notes concerning preoperative and postoperative test meals in 285 cases of chronic duodenal ulcer, thirty-seven showed little or no reduction in gastric acidity, and in all except eleven of these, he had made a special note of some abnormality, the most common being adhesion to the gallbladder or liver (seventeen cases), the opening nearer the pylorus than usual (three cases), the opening smaller than usual (two cases), antecolic operation (one case), and bruising around the anastomosis clamp (three cases). In seventeen of the thirty-seven cases, further symptoms developed, five of the patients had gastrojejunal ulcers. In 131 cases, free hydrochloric acid was absent, and the total acidity low. In none of these cases has there been a return of symptoms. There are also sixty-five cases in which there was great reduction of free hydrochloric acid, but not total abolition. The end-results in these are perfectly satisfactory. There were fifty-two cases in which the acidity was reduced to normal, and, while most of the patients remain quite well, symptoms persisted in five. None, however, developed jejunal ulcer. This is unmistakable evidence that the production of ulcers is intimately associated with the factor of gastric acidity.

If the results of gastro-enterostomy in chronic duodenal ulcer are summarized, as reported ten or more years after operation, it will be found that 88 per cent of patients have obtained satisfactory results, based on the relief of the symptoms caused by the ulcer, and that

the 12 per cent of incomplete results include 35 per cent recurrence of ulcer, 5 per cent recurrence of hemorrhage, and 35 per cent with no improvement. Such recurrences and failure to relieve symptoms can be largely prevented by improved preoperative, operative and postoperative management, and when they do occur, can be controlled or corrected by appropriate treatment or secondary operation. In this series of 1,000 cases, there were fifty-six secondary operations, 90 per cent of which were performed at the Mayo Clinic. Thirty-two of the secondary operations were for recurrence of ulcer (twenty-two of which were in the gastro-enterostomy, seven in the duodenum, and three in the stomach). I believe that a partial gastrectomy is justifiable at the second operation in such cases. If it could have been known that these patients had an unusual tendency to ulcer formation, such a procedure might have been advisable at the time of the first operation.

The important question is whether any other type of operation, if given sufficient trial, would lessen this small incidence of recurrence and failure to relieve symptoms completely. While there is undoubtedly a place in the surgical treatment of duodenal ulcer for the various types of pyloroplasty, or gastroduodenostomy, particularly that of Finney,⁶ C. H. Mayo⁷ or Horsley⁸ for local excision alone, or for the various types of gastrectomy, experience at the Mayo Clinic has shown that the indications are limited. For chronic duodenal ulcer, there have been performed in the Mayo Clinic, during the last nineteen years, 5,755 gastro-enterostomies, 296 local excisions with or without pyloroplasty or gastroduodenostomy, and forty-three resections. None of these operations will give absolute assurance against recurrence of ulcer or hemorrhage, or persistence of symptoms due to the original causes underlying the complaint, which may be nervous or reflex. The present enthusiasm of some surgeons for partial gastrectomy for duodenal ulcer is based on the belief that better end-results are assured by this operation, and in a general way, the value of any operation for duodenal ulcer lies in its power to reduce the acidity of the stomach and maintain this reduction. Theoretically, the removal of the ulcer-bearing portion of the stomach should prevent ulcer recurrence, but, practically, this is not certain. Finsterer⁹ reports six cases in which ulcer had recurred after partial gastrectomy, and, in the belief that not enough stomach had been removed, he resected another portion. It remains to be seen what the symptomatic results will be when enough stomach is removed to reduce the gastric acidity so low. Patients with achlorhydria frequently present a definite syndrome of gastric symptoms, and these symptoms may be more disabling than the symptoms for which the gastrectomy was performed. While the relation between hyperacidity and ulcer is not invariable, since well developed ulcers may exist (with achlorhydria), the fact remains that persistent hyperacidity is one of the most prominent features of peptic ulcer.

SUMMARY

At the present time, therefore, there is no conclusive evidence that any operation is more useful than gastro-enterostomy in cases of chronic duodenal ulcer, except

in carefully selected cases. Although partial gastrectomy may be indicated in cases in which there is a persistent recurrence of the ulcer after gastro-enterostomy, since this recurrence is certainly not over 3 per cent, it would be difficult to justify partial gastrectomy in 100 cases of nonmalignant disease in order to prevent such a small percentage of recurrence, particularly when such recurrence can be satisfactorily dealt with by secondary operation. Gastro-enterostomy is not destructive. The operation, in suitable cases, can be depended on to give excellent and permanent results in more than 90 per cent of the cases, and it has a distinct advantage over all other operations for peptic ulcer in that after the ulcer has completely healed, the anastomosis may be disconnected with ease and safety, if desired.

ABSTRACT OF DISCUSSION

DR. J. SHELFTON HORSLEY, Richmond, Va.: The excellent results reported by Dr. Balfour following gastro-enterostomy for duodenal ulcer demonstrate that this operation is exceedingly effective in a large proportion of such cases. When there is an actual stenosis by scar tissue or when there is an extensive infiltrating ulcer of the duodenum which forms a potential stenosis, a properly performed gastro-enterostomy gives as satisfactory end-results as can be desired. Gastro-enterostomy in gastric ulcer is not so satisfactory, and in cancer the relief is quite limited. It would be interesting to have some classification of the types of duodenal lesions in which Dr. Balfour's series of gastro-enterostomies have been performed. If they could be divided into (1) cicatricial stenosis, (2) extensive duodenal ulcers with potential stenosis, (3) small duodenal ulcers with adhesions, and (4) small limited duodenal ulcers without adhesions, we should have a most interesting group. In the first two classes the end-results of gastro-enterostomy are always good. It is in the class of cases of limited small duodenal ulcer with no adhesions or with adhesions only to the gallbladder that gastro-enterostomy seems to be most unsatisfactory. As the total series of gastro-enterostomies for duodenal ulcer dates back more than ten years, we may assume that the lesions in those days were somewhat more advanced and that there was a larger proportion of the first two classes of cases than there would be now, because the refinement of diagnosis and the attention that has been called to this lesion probably bring earlier cases. The less extensive the pathologic changes in the duodenum the stronger the indication for pyloroplasty. After excision of ulcers in the body of the stomach pyloroplasty is an excellent operation to relieve the physiologic obstruction to the emptying of a stomach that has been temporarily crippled by the operation and pyloroplasty leaves no undesirable after-effects, as a gastro-enterostomy with an open pylorus may leave. Pylorotomy, the crutery treatment of Balfour, and midgastric excision of the stomach all have a very definite field in the surgical therapy of gastric ulcers. In the pyloroplasty that I have been doing, I have found that in nearly 10 per cent of the cases there is a recurrent ulcer along the suture line. Doubtless this proportion is no greater than would be jejunal ulcers after gastro-enterostomy with a wide open pylorus. The work of Dragstedt, in showing that the most effective way of producing a chronic ulcer in the pyloric end of the stomach in a dog is to place a number of sutures in the mucosa is very suggestive. I have changed the technique of pyloroplasty, and now do not suture the gastric mucosa at all. The innermost row of sutures is omitted. The gastric mucosa is protected from injury even from the grasping of forceps as much as possible. As to the acidity, Dragstedt recently reported experiments which suggest that ulcers are apparently not due to high acidity but that the high acidity is due to the ulcer. That corresponds with well known facts.

DR. B. W. SIMP, Chicago: Every one familiar with the effect of gastro-enterostomy performed for duodenal ulcer that is causing pyloric obstruction recognizes that, if the patient survives the symptoms are likely to disappear at once and do not return in a large percentage of cases. We all

⁶ Finney, J. M. T. A New Method of Pyloroplasty. *Bull. Johns Hopkins Hosp.* 15: 155-161, 1902.
⁷ Mayo, C. H. Gastroduodenostomy. Its Indications. *Surg. Gynec. & Obst.* 38: 583-587 (May) 1924.
⁸ Horsley, J. S. A New Operation for Duodenal and Gastric Ulcer. *J. A. M. A.* 73: 575-583 (Aug. 23) 1919.
⁹ Finsterer, H. Local Anesthesia Methods and Results in Abdominal Surgery. New York: Rebman Company, 1923.

know that the mortality of the operation ranges from 1 or 2 to 100 per cent, depending on the skill of the operator. We have just listened to the report of supersurgeons giving a mortality of 2 per cent or slightly less and a return of symptoms in 12 per cent. In what manner does gastro-enterostomy bring about its beneficial results? Very clearly, the ulcer is not removed at the time of the operation. If it ceases to exist, it must do so by undergoing a definite healing process. It is very generally understood that the relief from symptoms, the apparent and real cures following gastro-enterostomy when performed for pyloric obstructive ulcer, are due chiefly to the hastened emptying of the stomach, thereby lessening the duration of contact of the irritating digestive gastric juice with the ulcer. Years ago it was believed that after gastro-enterostomy the stomach drained itself virtually immediately. We now know that a gastro-enterostomized stomach continues to empty itself through the pyloric outlet in proportion to the size of the opening through it, and that it does not empty itself of food and secretion appreciably quicker than the normal stomach. The beneficial influence on healing is proportional to the degree of obstruction. After gastro-enterostomy performed for high grade pyloric obstruction, a twenty-four hour contact of gastric juice with the ulcer is reduced to twelve or fourteen hours each day. The ulcer at the outlet is thereby placed in approximately the same conditions for healing as the nonobstructive duodenal or gastric ulcer without treatment. Unquestionably, in many instances ulcers develop in the stomach and duodenum and heal spontaneously. In our service we seldom have less than two or three, and have had as many as eleven gastro-enterostomized patients with recurrent ulcer under treatment in the hospital. Delayed emptying and excessive continued secretion are among the common conditions associated with recurrences after gastro-enterostomy. If the commonly accepted conception of peptic ulcer is correct, namely, that under certain conditions peptic gastric juice constitutes the greatest hindrance to the healing of ulcer that is amenable to medical or surgical control, then it must follow that the maximum healing effect of any type of treatment cannot be brought about without incorporating in it an accurate neutralization of the free hydrochloric acidity, thus completely annulling the irritating and peptic properties of the gastric juice.

DR ALFRED A. STRAUSS, Chicago. The evidence Dr Balfour has given us of the efficacy of gastro-enterostomy is so overwhelming as to be almost unquestionable. There are, however, clinics that do not report such a high percentage of excellent results from gastro-enterostomies. For instance, recently in Schmieden's clinic in Germany, out of 250 gastro-enterostomies 50 per cent were found to be failures. I believe, and I am sure Dr Balfour will agree, that the ideal principle for stomach surgery is, first, to remove the pathologic condition, and, secondly, to do an operation after which the stomach will empty in normal or quicker than normal emptying time. Gastro-enterostomy will allow a normal or quicker than normal emptying time, but it does not remove the pathologic condition or the lower half of the stomach, which is in constant spasm as a result of the pathologic condition in the duodenum, hence, there is a recurrence of symptoms. We have adopted a resection of the first portion of the duodenum, dissecting away the pancreas, taking the lower half of the stomach and doing a Polya or Polya-Balfour operation. In such cases, we find a 3 per cent mortality (mostly from post-operative pneumonias) which, compared with the mortality of gastro-enterostomy plus the cases in which there has to be reoperation following gastro-enterostomy, is about the same. It must also be admitted, even by the advocates of gastro-enterostomy, that the clinical end-results are much superior and much more permanent by the radical resection method. From resecting the first portion of the duodenum, we find that from 35 to 40 per cent of our cases are posterior wall duodenal ulcers penetrating into the pancreas, a good portion of the duodenal wall having sloughed away. These cases will continue to give symptoms after gastro-enterostomy, and many result in gastrojejunal ulcers. In such cases I believe it better to leave the patient in the hands of the medical man than to do an operation which is only a makeshift and which will have to be followed by a second operation. By resection

I believe that we produce a much more permanent cure. As to the pathologic changes, we find in serial sections of the duodenum that it is infiltrated with lymphocytes, eosinophils, plasma cells and scars of healed ulcers. We are therefore dealing with a duodenitis in addition to the ulcers. For this reason I believe that, if the mortality can be kept around 2 or 3 per cent, the essential method is to remove the pathologic condition, and then do an operation so that the stomach or duodenum empties in normal or quicker than normal time, such as a radical resection, which gives better clinical end-results than gastro-enterostomy.

DR ROBERT T. MORRIS, New York. The report on cases of recurrence is not complete unless we have in addition reported on something besides the mechanistic surgical features. These patients are largely patients who are sensitized to certain toxins. They have a morbid sensitization of the endoderm of the midgut. We will find in many cases of recurrence that no competent steps have been taken medically to change the immunity cycle, and no search has been made for foci of infection in teeth or tonsils or other causes for disturbance of the hormone secretion of the stomach. It seems to me that we are not accepting freely enough Rosenow's idea of elective affinity for toxins in these cases. In my experience most of these patients who come back for operation are the patients who have not had any exhaustive search made for foci of infection or for peripheral irritation factors, eye strain, loose kidney or nasal defects, for example, causes leading to disturbed hormone secretion. In cases of recurrence, then, any report is incomplete unless we have this collateral testimony presented showing that the original causes for ulcer have been disposed of in the cases.

DR CHARLES H. MAYO, Rochester, Minn. This paper has been timely on account of the failures that are resulting from various operations on the stomach, possibly because gastro-enterostomies are made in an effort to relieve the symptoms incident to supposed ulcer on the posterior wall, and not looked for by the operator. If gastro-enterostomies are performed when no ulcers exist, they separate later. The point that gastro-enterostomy relieves symptoms with a small risk, if there is a real indication for it, is of interest however, it takes both a medical man and a surgeon to deal with these cases properly. Dr Will used to say, in reference to the recurrences, that a surgeon should never operate on a patient with ulcer of the stomach until he had had nine complete and permanent cures through medical treatment. There is, however, no question but that ulcers of the stomach do heal. Careful post-mortem examination to ascertain the cause of death will reveal a great many beautifully healed scars in the duodenum and stomach of patients who presented no evidence of ulcers during life. It can be shown by proper tests that certain persons have hypersensitive stomachs, and others hyposensitive. I congratulate Dr Sippy on his results in treating these cases. Since many gastric and duodenal ulcers heal without the knowledge of either patient or physician, it is quite probable that many heal under treatment. The advisability of wide excision in these cases is certainly open to question. I have in mind Finsterer's operation, which he demonstrated here a year ago. If I had an ulcer of the duodenum I should not permit any one to remove half of my normal stomach in order to cure the duodenal ulcer. I believe that we must exert ourselves to bring about cure or relief of unfortunate conditions that have been shown to be secondary to ulcers of the stomach, but ulcers of the duodenum do not become malignant. Occasionally a Billroth I operation should be performed for extensive local disease with mechanical obstruction. If patients are suffering from an ulcer of the duodenum, and the lower 2 inches of the pyloric end of the stomach is removed, there will certainly be a loss of hormones, which will influence the acids, and the patients will be unable to eat meat or egg albumin unless they take medicine with their food. It will be found that many patients with greatly dilated duodenums have gastric neurosis and various other complaints that will remain with them all their lives. Usually they have no acids in the stomach, and there is a reversal of the duodenal alkalis back into the stomach. A gastro-enterostomy will not relieve them, and the condition may go on to gastric tetany. Relief from the obstruction of the lower end of the duodenum into the

jejunum is needed. Typical pyloric ulcers are produced in animals by dividing the pylorus, turning in the duodenal end, sectioning the jejunum, anastomosing the distal end to the stomach, and draining the proximal end into the ileum. In the majority of cases, ulcer of the jejunum develops. In the same dogs in which ulcers have been produced mechanically and biochemically, it will be found that the type of streptococci that locate in ulcers will produce ulcers under proper conditions. If these ulcers of the duodenum are tested the same type of streptococci will be found that occur in the human patient.

DR WILLARD BARTLETT, St Louis. It seems to me that the upshot of this whole thing is that we are confronted with a condition rather than with a theory. All of us who have done only a few gastro-enterostomies, not having learned to do them very well, have cases that are classed as unsatisfactory operations. All the men who have spoken are men whose opinions are valuable and who have been doing the right thing, I believe, but they have not done the operation on 1,000 patients and reported the results ten years later, so I say that we are confronted in those opinions with theories, while in the operating room we are confronted by a very definite condition, and when we are confronted with that condition tomorrow or next week, we should remember that the only man at this time who is doing surgery of the stomach on a very large scale has reported 1,000 cases, the patients having all been operated on more than ten years ago with a percentage of mortality and morbidity as low as or lower than those reported by the rest of us with more limited experience with another method. I believe that your duty will seem obviously clear under the circumstances, at least, mine will.

DR W D HAGGARD, Nashville, Tenn. Extensive resection of the stomach as practiced in Germany is not going to be adopted in America. We had the pleasure of having Professor Finsterer at Vanderbilt. We admired his skill, but were amazed at his courage. It seemed extravagant to remove such a large portion of a healthy stomach for duodenal ulcer and then supplement that operation with a cholecystectomy and appendectomy at the same time. Moreover, some surgeons have been so impressed with the character of this operation, and it has so appealed to them as far as the technical surgical gymnastics have been concerned, that they remove the right half of the stomach when they want to get at a duodenal ulcer that was adherent to the pancreas and could not be removed. One third of the stomach was removed, but the duodenal ulcer for which the operation was done had to be left. As far as end-results are concerned, they have been extremely satisfactory with gastro-enterostomy. I am gratified to find that Dr Balfour and his colleagues have done twenty-five gastro-enterostomies to one resection. I felt, in analyzing 100 cases of duodenal ulcer with only two resections, that we were old fashioned and behind the times, but I now see that my own attitude has had very strong support. I was astonished, in the analysis of these 100 cases, that 22 per cent had perforated, and I was greatly chagrined that the mortality was 40 per cent in cases of perforation. I might say in explanation that the great majority of these cases had passed ten, twelve, fourteen and even twenty eight hours so that practically no patients in our series were saved after eight hours. In some of the cases of duodenal ulcer in the medical service, perforation occurred in the hospital, and in one case in which we proposed a gastro-enterostomy three years before, and it was declined, the patient returned because of extensive hemorrhage. We performed transfusion preparatory to operating. After a few days he had a fatal hemorrhage while awaiting operation.

DR DONALD C BALFOUR, Rochester, Minn. I should like to emphasize what Dr Morris said about the patients who come back with recurrences. If a diligent enough search is made, it will often be found that the cause or causes that originally were responsible for the ulcer are still there. In this connection, it is significant that, in the 1,000 cases studied, many of the patients who had a recurrence or symptoms were found to be in a group of 126 from whom the appendix had not been removed. My real purpose in presenting this paper is to place on record the end-results of gastro-

enterostomy in duodenal ulcer, so that when the end-results of radical resection and other types of operation are reported, this record will be of some value for comparative purposes. Both Dr Mayo and Dr Haggard referred to the question of partial gastrectomy for peptic ulcer. This operation is often indicated for gastric ulcer, but it is rather difficult to justify such an extensive operation for a high-lying small ulcer of the lesser curvature, since excellent results can be obtained by local excision and gastro-enterostomy. It would be still more difficult to justify partial gastrectomy for duodenal ulcer, since gastro-enterostomy will give good results in more than 90 per cent of the cases.

COMPARATIVE METHODS OF PROTEIN EXTRACTION WITH CHEMICAL AND CLINICAL STUDIES*

GEORGE PINESS, MD

HYMAN MILLER, MD

AND

GORDON A ALLES, BS

LOS ANGELES

Protein skin tests are a generally accepted method of diagnosis in allergic diseases. It is known that they furnish reliable evidence in determining the etiologic factors concerned in allergic manifestations. This reliability is based on evidence that may be demonstrated both clinically and experimentally. On the clinical side, we know that typical skin or systemic reactions are more or less constant for each specific protein in a given sensitive individual, that removal of this protein relieves the allergic symptoms, and that by small, graduated doses it is possible to immunize a sensitive individual against this protein's injurious effects. On the laboratory and experimental side, we know that many proteins give a precipitin or a complement fixation test with the serum of the individual in whom they produce allergic symptoms, that it is possible to sensitize a hitherto nonsensitive individual to a given protein, and that there is an analogous and, in almost every way, similar train of evidence obtainable in experimental animals as demonstrated in the production of anaphylactic shock. This, then, summarizes the evidence on which is based the general acceptance of the protein skin tests.

Throughout the vast amount of scientific work that has been done to make possible the foregoing dogmatic statements, the assumption has arisen that proteins and only proteins are capable of producing anaphylactic or allergic reactions. Indissolubly bound up with this assumption is that of the specificity of immunologic phenomena. One cannot be discussed without the other. In general, they must be accepted, yet evidence is constantly being gathered attacking their fundamental basis. Thus, Manwaring¹ has been able to produce an anaphylactic reaction in a guinea-pig lung with Vaughan's split protein, Wells² speaks of the specificity of lipid substances, and recently Landsteiner³ has produced anaphylaxis by sensitizing an animal to one protein containing an azo group, and using as the anaphylactic dose another protein to which the same azo group had been attached. Moreover, peptone shock

* Read before the Section on Pharmacology and Therapeutics at the Seventy-fifth Annual Session of the American Medical Association, Chicago, June 1924.

¹ Manwaring W H and Marino H D. I. Reactions to Histamine and Vaughan's Protein Split Product. J Immunol 8 317 (July) 1923.

² Wells H G. Chemical Pathology 1922.

³ Landsteiner K. Experiments on Anaphylaxis to Azoproteins. J Exper Med 39 631 (May) 1924.

and nonspecific protein shock, questioning in the one instance the protein basis and in the other the protein specificity of immunologic phenomena, have long been known. Add to this our inability to produce a single protein of constant chemical composition, and we have sufficient evidence of the incompleteness of our knowledge of proteins.

We believe that a further study of the chemical nature of protein, checked up with clinical observations, will throw considerable light on what is as yet an obscure subject. In all the work on allergy, the first unknown factor is the protein, the basic tool with which we work. Not only is its nature unknown, but the methods of obtaining proteins in the great majority of cases are based, to a great extent, on purely empiric grounds. The substances obtained by various methods of extraction are called proteins; they produce skin reactions, they produce constitutional reactions, and, in the laboratory and on experimental animals, they pass the criticism of producing those reactions which we have learned to recognize as criteria of immunity or the lack of it. Numerous methods are used to extract these substances. Yet, so far as we know, no systematic study has been made with the greater number of the proteins used in protein skin tests to determine whether we are here dealing with one or many proteins, or whether, in fact, we are dealing with proteins at all.

In an attempt to attack this problem rationally, we have undertaken some elementary studies in the use of different solvents for the extraction of these substances. As stated, many methods have been described by Goodale,⁴ Coca,⁵ and others, for dissolving out these substances from the animal danders, foods and pollens, with the specific idea of using them for protein skin tests. The production of dry proteins for this purpose, using water and physiologic sodium chlorid solution as extractives, has been described by Wodehouse,⁶ Osborne,⁷ Mendel and Harris have described methods for extracting proteins from cereals, and Wells and Osborne⁸ for extracting proteins from vegetables. Methods for obtaining the various proteins of eggs and milk have long been known, the products so obtained have been found satisfactory in their application as antigens for the protein skin tests.

This paper is a preliminary report. We have not attempted to cover the general subject of extraction of all substances responsible for allergic skin reactions, but have studied the extraction of foodstuffs and animal epidermal structures. No consideration has been given to the extraction of pollens or of bacterial preparations. The task of securing suitably sensitive persons who are willing to be repeatedly tested, together with the difficulty of securing uniformly consistent skin reactions on a given individual, causes our problem to be complex, thus adding to the difficulty of obtaining sufficient evidence on the subject to be conclusive.

So far as the character of the substances causing the allergic skin reactions are known, they are an intimate part of the protein molecule. For this reason, solvents were used in this work that would be expected to extract differentially the several classes of protein that might be present. The main facts regarding the solu-

bilities of the simple uncoagulated proteins are as follows:

1 Albumins, some globulins, histons and protamins are soluble in water.

2 Globulins, together with most of the proteins soluble in water, dissolve in dilute (from 1 to 10 per cent) sodium chlorid solution.

3 Prolamins are soluble in alcohol (from 70 to 90 per cent).

4 Albuminoids are not soluble in dilute acid, dilute alkali, water, salt solutions or alcohol.

These are only qualitative statements of solubility behavior, and, although not exact in nature, probably afford the most satisfactory characterization of the different classes of protein.

With these statements in mind, the following solvents were chosen for the extraction of the substances giving the allergic skin reactions:

- A 1 per cent sodium chlorid solution
- B 5 per cent sodium chlorid solution
- C 10 per cent sodium chlorid solution
- D 0.5 per cent sodium hydroxid solution
- E 0.5 per cent sodium hydroxid containing 5 per cent sodium chlorid
- F Coca's solution,⁵ which is a dilute sodium bicarbonate, phenol (carbolic acid) solution
- G 10 per cent alcohol
- H 70 per cent alcohol
- I 95 per cent alcohol

Solutions F and G, Coca's solution, and 10 per cent alcohol solution serve as comparison solutions, Coca's solution being a satisfactory solvent for foodstuffs and animal emanations, and 12 to 14 per cent alcohol being reported as a satisfactory solvent for animal allergens by Goodale,⁴ Wodehouse⁶ and others. The 95 per cent alcohol solvent was used because it would not be expected to dissolve protein but should dissolve many protein split products, glucosids, nitrogen extractives and similar classes of compounds that might contribute to the allergic reaction.

TABLE 1—Character and Proportion of Material in Grams Treated with Twenty Cubic Centimeters of Solvent

Material	Weight in Grams
Cabbage fresh ground	10
Banana ripe fresh ground	10
Rye milled flour	1
Horse dander ether extracted	1
Chicken bones removed, meat ground	5
Pens dried ground	1
Dog hair ether extracted	1
Peanuts ground ether extracted	1
Salmon, fresh bones removed ground	5
Walnut, ground ether extracted	1
Wheat whole milled flour	1

One or more of each of the following food groups was extracted: cereals, fruits, meats, nuts, seafoods and vegetables. Horse dander and dog hair were used for the epidermal structure extracts. The proportion of material to 20 c.c. of solvent in making the extracts is stated in Table 1. The extracts were made by continuous shaking with the solvent for one hour at room temperature, centrifugating out the major portion of undissolved material, and finally filtering through paper. The solutions were preserved under toluene in stoppered bottles, and kept in a refrigerator when not in use. Some precipitation occurred, on standing, in most of the extracts made, but all of these solutions appeared

4 Goodale J L. Diagnosis and Management of Vasomotor Disturbances of the Upper Air Passages. Boston M & S J 175 181 (Aug.) 1916.

5 Coca A F. Studies in Specific Hypersensitiveness. V, J Immunol 7 166 (March) 1922.

6 Wodehouse R P. Preparation of Vegetable Food Proteins for Anaphylactic Tests. Boston M & S J 175 195 (Aug.) 1916.

7 Osborne T B. The Vegetable Proteins. New York Longmans Green & Co 1923.

8 Wells H G and Osborne T B. Anaphylactogenic Activity of the Vegetable Proteins. J Infect Dis 14 377 1914.

9 Wodehouse R P. VI. Immunochemistry of the Proteins of Cat Hair. VII. Horse Dander, VIII. Dog Hair. J Immunol 2 227, 237 243 (April) 1917.

to have retained their activity over the period of about three months during which they were in use.

All the solutions were analyzed for their nitrogen contents by a colorimetric micro-Kjeldahl-Nessler method (Table 2). The designation nonprotein nitrogen has been arbitrarily applied to the nitrogen content present that is not precipitated in a 2 per cent phosphotungstic acid solution (Table 3). This designation,

reaction, usually more than 15 cm in diameter. In addition, it might be stated that no skin manifestation was called a reaction unless it showed definitely the pseudopods that we have learned to associate with the typical allergic skin reaction (Table 4).

Table 5 is a summary of the results obtained by using the solutions described above in the protein skin tests. In this table, the denominator of each fraction indicates

TABLE 2—Total Nitrogen in Milligrams per Cubic Centimeter

Solvent	Cabbage	Banana	Rye	Pea	Horse Dander	Chicken	Dog Hair	Peanut	Salmon	Walnut	Wheat
A 1% sodium chlorid	0.84	0.79	0.91	0.92	2.02	1.92	0.31	1.79	2.50	0.29	0.40
B 5% sodium chlorid	0.78	0.78	0.85	1.14	2.01	2.61	0.15	3.00	2.00	0.43	0.43
C 10% sodium chlorid	0.72	0.70	0.82	1.02	1.89	1.98	0.15	1.50	3.00	0.32	0.23
D 0.5% sodium hydroxid	0.88	0.91	0.90	1.67	2.40	4.72	0.41	5.37	7.10	3.21	1.68
E 0.5% sodium hydroxid + 5% sodium chlorid	0.96	0.98	0.90	1.43	2.19	3.79	0.33	4.20	3.50	2.35	1.09
F Coca's solution	0.81	0.78	0.64	1.01	2.01	1.92	0.17	2.68	1.02	0.40	0.41
G 10% alcohol	0.80	0.80	0.62	0.72	1.98	1.44	0.16	2.20	1.17	0.32	0.40
H 70% alcohol	0.92	0.60	0.60	0.40	1.72	0.63	0.10	0.30	0.81	0.76	0.61
I 93% alcohol	0.78	0.58	0.40	0.40	1.40	0.54	0.01	0.24	0.81	0.22	0.20

TABLE 3—Difference Between Total Nitrogen and Nonprotein Nitrogen in Milligrams per Cubic Centimeter

Solvent	Cabbage	Banana	Rye	Pea	Horse Dander	Chicken	Dog Hair	Peanut	Salmon	Walnut	Wheat
A 1% sodium chlorid	0.34	0.11	0.72	0.75	1.72	1.63	0.17	1.07	0.18	0.18	0.38
B 5% sodium chlorid	0.29	0.58	0.66	0.97	1.69	2.32	0.01	2.74	0.72	0.26	0.26
C 10% sodium chlorid	0.23	0.1	0.63	0.85	1.59	1.69	0.01	1.24	0.71	0.31	0.31
D 0.5% sodium hydroxid	0.34	0.61	0.70	1.03	2.07	4.44	0.20	5.09	4.81	3.07	0.97
E 0.5% sodium hydroxid + 5% sodium chlorid	0.29	0.62	0.69	1.21	1.89	3.72	0.20	4.06	3.22	2.22	0.91
F Coca's solution	0.32	0.56	0.43	0.71	1.73	1.60	0.02	1.80	0.67	0.29	0.34
G 10% alcohol	0.21	0.80	0.44	0.56	1.61	1.15	0.01	2.03	0.82	0.71	0.31
H 70% alcohol	0.11	0.60	0.41	0.31	1.28	0.34		0.13	0.40	0.15	0.53
I 93% alcohol		0.26	0.23	0.40	0.92	0.20		0.01	0.46	0.11	0.17

TABLE 4—Method of Tabulating Results of Skin Reactions with Horse Dander

Solvent	Total Nitrogen Mg per Cc	Nonprotein Nitrogen Mg per Cc	Names of Subjects									
			M	J	M	O	F	Liv	R	D	W	D
A 1% sodium chlorid	2.02		+++			++++		+++	+++	++++	+	++++
B 5% sodium chlorid	2.01	0.30	+++			++++		+++	+++	++++	+	++++
C 10% sodium chlorid	1.89		+++			++++		+++	+++	++++	+	++++
D 0.5% sodium hydroxid	2.40	0.83	0			++		+++	+++	++++	+	++++
E 0.5% sodium hydroxid + 5% sodium chlorid	2.19	0.30	0			++		+++	+++	++++	+	++++
F Coca's solution	2.01	0.28	+++			0		+++	+++	++++	+	++++
G 10% alcohol	1.93	0.37	+++			++		+++	+++	++++	+	++++
H 70% alcohol	1.72	0.44	0			0		0	++	+	0	0
I 93% alcohol	1.40	0.48	0			++		0	++	+	0	0

though purely arbitrary, is as nearly the proper one as we can determine by a consideration of the literature on the precipitation behavior of protein and nonprotein nitrogenous compounds.

Consulting Table 2, we see that solutions D and E, viz., the 0.5 per cent sodium hydroxid and the 0.5 per cent sodium hydroxid plus 5 per cent sodium chlorid, consistently gave the largest yield of total nitrogen per milligram per cubic centimeter. Comparing this with Table 3, which tabulates in the same manner for each substance and each extractive the difference between the total nitrogen and the nonprotein nitrogen per milligram per cubic centimeter, thus giving presumably the amount of protein nitrogen present, we find again that in almost every instance Solutions D and E were most efficient.

The skin tests reported were made by a single observer by the usual cutaneous scratch method on the arm or back of the person tested. A complete set of solutions of one material was tested at one time, in order to minimize the variations in reactions of the individual as much as possible. The markings indicating the reactions have the following significances: Zero denotes no reaction, + a questionable reaction, ++ a distinctly positive but weak reaction, +++ a good positive reaction, and ++++ a strongly positive

reaction, usually more than 15 cm in diameter. In addition, it might be stated that no skin manifestation was called a reaction unless it showed definitely the pseudopods that we have learned to associate with the typical allergic skin reaction (Table 4).

TABLE 5—Summary of Skin Reactions Obtained by Using Various Extracting Fluids

	A	B	C	D	E	F	G	H	I
Cabbage	2/4	4/4	0/4	0/4	2/4	1/4	0/4	2/4	1/4
Banana	2/2	2/2	2/2	2/2	2/2	2/2	1/2	1/2	1/2
Rye	0/3	3/3	3/3	1/3	0/3	2/3	2/3	0/3	0/3
Pea	1/1	1/1	1/1	1/1	0/1	0/1	0/1	0/1	0/1
Horse dander	7/7	7/7	7/7	5/7	7/7	6/7	7/7	3/7	3/7
Chicken	1/1	1/1	1/1	1/1	1/1	0/1	0/1	1/1	1/1
Dog hair	2/4	3/4	3/4	1/4	3/4	1/4	3/4	1/4	1/4
Peanut	3/3	3/3	2/3	2/3	2/3	3/3	3/3	1/3	1/3
Salmon	1/2	1/2	0/2	0/2	2/2	1/2	1/2	0/2	0/2
Wheat	3/3	3/3	3/3	0/3	3/3	2/3	2/3	2/3	2/3
Walnut	3/4	3/4	3/4	1/4	3/4	3/4	1/4	0/4	0/4
Totals	27/34	31/34	29/34	14/34	27/34	21/34	20/34	11/34	10/34

clinical side, the most efficient extractives were Solutions A (1 per cent sodium chlorid), B (5 per cent sodium chlorid) and C (10 per cent sodium chlorid), which gave the highest total number of positives, in spite of the fact that they do not contain either as much total nitrogen or protein nitrogen by difference as do

Solutions D and E. This, of course, is probably explained by the fact that the alkali content in Solutions D and E is sufficient to hydrolyze the proteins or other active substances present with consequent loss of activity. The least effective extractive proved to be the 95 per cent alcohol, as would be expected. However, inspection of the table shows that although alcohol in this concentration is a very poor solvent for proteins, yet the considerable number of reactions obtained with many of the extracted materials indicates that some active substances, whether proteins or not, are extracted by this solvent.

SUMMARY AND CONCLUSIONS

1 Owing to our fragmentary knowledge of protein chemistry as applied to allergy, further research into the chemical nature of proteins and their clinical application in allergy is needed.

2 A systematic study of the actions of various chemical solvents in extracting substances capable of producing skin reactions indicates that the solvent known to be most effective in extracting the natural proteins without denaturation, namely, salt solution up to 10 per cent, is also most effective in obtaining skin reacting substances.

3 Neither the total nitrogen content nor the so-called protein nitrogen content by difference can be used to foretell the activity of a solution.

4 Ninety-five per cent alcohol, although not a protein solvent, extracts substances that produce allergic skin reactions.

1136 West Sixth Street

ABSTRACT OF DISCUSSION

DR. J. H. BLACK, Dallas, Texas. The work of Dr. Piness emphasizes the fact that a very large amount of fundamental information is necessary before we can get better results than we are getting today in protein or pollen therapy. Using myself, because I happen to be a typical ragweed hay-fever sufferer, I have found that the nitrogen content of pollen extracts has no relationship to their activity in the nose or intracutaneously. I found that extracts could be digested with trypsin and dialyzed against distilled water and, though they would no longer give a biuret reaction, their activity was qualitatively and quantitatively unchanged. I shook extracts for four hours in a mechanical shaker, froze them solid for six days, boiled them for ten minutes and put them in the autoclave at 10 pounds pressure for ten minutes without reducing or altering their activity. I found that extracts which, before digestion, were suitable for use as antigens in complement fixation tests, after digestion were antigenically inert although as active as ever in the nose and skin. I found that animals injected with pollen extracts poor in protein did not show any evidence of anaphylaxis but, when bled afterward and their serum mixed with some of the appropriate pollen extract, this mixture injected into the skin of a normal person gave a typical wheal. Pollen extracts which had been digested would when mixed with these serums, give the same reactions in the skin of the normal individual. I believe therefore, that there is a substance, other than protein which is the active principle in pollen extracts. I believe that anaphylactic reactions in animals injected with pollen extracts are reactions to the protein of the extract and have no relationship to the active substance of the extract.

DR. GEORGE PINESS, Los Angeles. Our work did not include the chemical study of bacterial or pollen proteins because we knew that this was being done by others. The interesting phase of this study was the fact that some workers stated that the reliability of the protein was dependent on the amount of nitrogen contained therein. I do not agree with them, because it was shown in our studies that many substances which contained very small amounts of protein nitrogen gave marked clinical reactions and vice versa.

HABITUAL HYPERTHERMIA DURING RECOVERY FROM SCARLET FEVER *

HEINRICH FINKELSTEIN, M.D.

BERLIN, GERMANY

By habitual hyperthermia we understand a chronic, moderate elevation of the body temperature for which no external cause, such as an infectious focus, can be found. The mean temperature lies above 37.5°C (99.5°F), and the peaks range between 37.8°C (100°F) and 38.2°C (100.7°F). Such cases are quite frequent in childhood.

The individuals affected are apparently of a sensitive type with vasomotor irritability, in whom careful examination reveals no findings to explain this condition. All organs, including especially the nasopharyngeal tract and cervical glands, are normal, and there is no latent tuberculosis. The elevated temperature persists for weeks and months without causing an appreciable disturbance of the general condition. The usual antipyretics have no influence on the hyperthermia. But, in many cases, by a sojourn in a favorable climate—in the mountains or at the seashore—the body temperature becomes normal in a short time and remains normal, either permanently or for a considerable period. The elevation of temperature is present even during bed rest, and thus "habitual hyperthermia" is differentiated from the so-called "exercise hyperthermia," which occurs in many children after slight muscular exertion.

How can this hyperthermia be explained? An infectious etiology cannot be determined; therefore, it seems permissible to assume that there is a disturbance of the normal temperature regulation. As is well known, the temperature is regulated by the center located in the midbrain. This center is connected by the autonomic nervous system—sympathicus and parasympathicus—with the heat producing organs (glands of metabolism, muscles) as well as with the physical heat regulators (sweat glands, capillaries of the skin). It is reasonable that a slight disturbance of this nervous apparatus, a neurosis of the autonomic system, may produce a chronic hyperthermia.

I have no experimental data on children of the type just described. I have, however, together with Dr. Block and Dr. Kohnsberger, investigated scarlet fever convalescents at the Kaiser and Kaiserin Friedrichspital in Berlin. We were struck by the fact that a very large number of scarlet fever convalescents showed temperature elevations beginning in the third or fourth week after the scarlet fever itself had subsided and persisting for many weeks. I have been unable to find mention in the literature of this slight hyperthermia after scarlet fever, but undoubtedly it is observed everywhere with equal frequency.

What is the explanation? We found neither tuberculosis nor inflammatory sequelae, in spite of the most careful examination. The condition was present even after very mild scarlet fever that had been characterized only by fever and eruption. Thus, we considered a nervous disturbance of temperature regulation and attempted to solve the question by pharmacologic methods.

Hollo and Weil have worked along those lines in order to determine the genesis of similar temperature elevations in adults, which are usually erroneously

* Read before the Section on Diseases of Children at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

explained on the basis of suspected tuberculosis. They found that subfebrility on an infectious basis is promptly influenced by good-sized doses of an antipyretic, whereas the noninfectious hyperthermia caused by essential disturbance of the nervous heat regulation is relieved by opium. The latter type of hyperthermia they have designated "constitutional subfebrility." Our patients reacted neither to opium nor to antipyretics, even when quite large doses were used. I do not wish to discuss here the extent to which the views of Hollo and Weil are correct. This question is of no importance for my purposes, since this investigation turned out negatively. I shall only mention briefly that even infectious fevers do not always subside as regularly to antipyretics as Hollo and Weil state.

PHARMACOLOGIC TESTS

But the idea of determining the cause of the fever by pharmacologic tests is fertile, and we carried it further by testing our patients with those remedies which are used for testing the autonomic nervous system, namely, atropin, pilocarpin and epinephrin. We used intravenous injections since by oral, subcutaneous and perlingual administration the effect is either uncertain or absent. The dose of the drugs was that indicated by Friedberg as the smallest quantity just effective in normal children. We used from 2 to 5 decimilligrams ($\frac{3}{1,000}$ to $\frac{1}{4,000}$ grain) of atropin, from 4 to 7 decimilligrams ($\frac{6}{1,000}$ to $\frac{1}{1,000}$ grain) of epinephrin, and from 1 to 5 mg ($\frac{2}{100}$ to $\frac{1}{100}$ grain) of pilocarpin, depending on the age of the child.

According to recent investigations, atropin produces fever quite frequently in normal children, presumably by inhibiting perspiration due to diminution of the vagus tonus. Epinephrin, also, is known to produce fever, which can probably be explained by heat stasis due to contraction of the capillaries of the skin. Pilocarpin either has no effect on the temperature or lowers it somewhat, probably because of increased sweat formation.

The reaction of the subfebrile scarlet fever convalescents was in marked contrast to this reaction of normal children. Atropin was persistently without effect. Pilocarpin always produced high fever, frequently 39 C (102 F), whereas the temperature in all cases became normal or even subnormal, following the administration of epinephrin. This effect of epinephrin usually persisted for from two to three days and in some cases the temperature remained permanently normal after a single injection of epinephrin. Control patients with slight infectious temperature elevation were never influenced.

Under these conditions, it seems permissible to attribute this habitual hyperthermia of scarlet fever convalescents to a balance disturbance in the autonomic nervous system or in the heat regulating center. There is, then, a neurosis. If we consider that epinephrin usually is regarded as a stimulant of the sympatheticus, pilocarpin as a stimulant of the vagus, and atropin as an inhibitor of the vagus tonus, and if we see in our case that the sympathetic stimulation removes the fever, while vagus stimulation increases the fever, and vagus inhibition has no effect, we are led to think of a relative vagotonia due to weakness of the sympathetic nervous system.

How can we explain the frequency with which this hyperthermia is seen after scarlet fever? This cannot be accidental, rather, it must depend on the peculiarities of scarlet fever. Does scarlet fever perhaps go hand

in hand with a change of the nervous system in the sense of a vagotonia?

In order to decide this question, we have tested pharmacologically the autonomic nervous system of fifteen children during and shortly after the acute stage of scarlet fever. Simultaneously, we tested a number of healthy children in the same way. We obtained the following results. Epinephrin, as a rule, produces a rise in blood pressure and acceleration of the pulse in the healthy child, whereas it produces lowering of the blood pressure and slowing of the pulse in patients with scarlet fever. The same behavior that was shown by our children with scarlet fever has been observed in animals after experimental vagus stimulation and also in adults with vagotonia. In both cases, by previous diminution of the vagotonus due to atropin, the reaction after the administration of epinephrin becomes normal.

This speaks for pathologic vagotonus as a regular consequence of scarlet fever. The fact that pilocarpin produces very marked secretion of saliva and sweat speaks for the same conclusions. Atropin produced no distinct effect. The eruption and the fever were, of course, not influenced by the drugs during the acute stage. Thus it may be said that scarlet fever apparently affects the autonomic nervous system in the sense of a vagotonia and that in many cases it leaves the patient for many weeks with a vegetative neurosis characterized by habitual hyperthermia.

CONCLUSION

Whether the cases of habitual hyperthermia that have no connection with scarlet fever can be explained in the same way is impossible for me to state. At any rate, it will be of interest to test them by the same methods.

The experience that, in a few cases, a single injection of epinephrin removed the hyperthermia allows us to hope that an effective method of treatment will be found. This is desirable, although hyperthermia is attended with no dangers and does not disturb the general condition of the patient. But the members of the family are usually very much alarmed, especially because they fear an occult tuberculosis.

Clinical Notes, Suggestions, and New Instruments

REPORT OF A CASE OF EARLY RUPTURE OF FETAL MEMBRANES

MILDRED VAN CLEVE, M.D., MACOMB ILL.

"Dry labor," due to rupture of the membranes before complete dilatation of the cervix, at the onset of labor, or preceding labor by several hours or even days, is a not uncommon obstetric complication, but rupture weeks or months before delivery is rare. Williams¹ says of this condition: "Ordinarily, labor sets in within twenty-four hours after rupture of the membranes, but exceptionally, several days or even a week or longer may elapse. Meyer-Ruegg, in 1904, collected from the literature fifteen cases in which several months elapsed between this occurrence and the completion of labor, though so long an interval is very unusual."

A search through the recent literature available affords but one reference to very early rupture of the membranes

¹ Williams, *Obstetrics*. New York: D. Appleton & Co., p. 245.
² Meyer-Ruegg, *Eihauterstung ohne Unterbrechung der Schwangerschaft*. Ztschr. f. Geburtsh. u. Gynak. 51: 419, 1904.

McQuarrie,³ in a report on 2,717 deliveries in the University of California Hospital, records two of the total 119 fetal deaths occurring in this series as having been due to this cause. In one of these cases, the child died from an ascending infection through the cord, the membranes having ruptured one month before delivery.

REPORT OF CASE

Mrs. E. R., aged 23, seven months pregnant, came to the clinic, June 6, 1924, complaining of a watery discharge from the vagina. The medical history was irrelevant, the first pregnancy had terminated in a normal, full-term delivery three years before, the second, in a spontaneous abortion in September, 1923, accompanied by rather profuse hemorrhage. She menstruated normally the last week in October, 1923, again became pregnant, felt quickening in February, and expected delivery about the first week in August, 1924.

The pregnancy proceeded normally until April 15, when the patient was awakened at night by a sudden gush of colorless fluid from the vagina, unaccompanied by pain, since which time a little fluid had dribbled from the vagina almost constantly, especially on exertion. Recently, this discharge had been at times blood-stained and malodorous, frequently containing white, cheesy particles. Late in May, the patient had two hemorrhages, the first lasting two days, followed in a week by another lasting one and a half days, the flow being somewhat more profuse than that of the menstrual periods. She had felt fairly well, had felt active fetal movements, and had had at no time any symptoms of labor.

Physical examination, made June 6, was negative except for rather marked pallor. Temperature, pulse, urine, blood pressure and pelvic measurements were normal. Abdominal enlargement was less than is usual at seven months, the fetus was small and easily mapped out, there was breech presentation, the movements were vigorous, and loud fetal heart tones were heard just below the umbilicus, at a rate of 140 a minute. There was a slight watery discharge from the vagina, without color or odor. Vulvar and vaginal tissues were moist and slightly edematous. On account of the suspicion of placenta praevia, a vaginal examination was made under aseptic conditions. The cervix was enlarged, edematous and boggy, and the external os was patulous, no placental tissue was felt, a foot presenting.

A diagnosis was made of premature rupture of membranes, with a possible marginal placenta praevia, and the patient was advised to stay in bed for a time, elevating the hips and using antiseptic external douches and sterile perineal pads.

Four days later, however, she had not succeeded in making household arrangements permitting her to remain in bed all the time, and about midnight, labor pains began, terminating the following morning at 9:45, June 10, in a breech extraction (footling) of a living male infant weighing 5 pounds, (2.3 kg.) slightly asphyxiated, but readily resuscitated. Very little liquor amnii escaped. Several large clots passed very shortly after the birth of the fetus. The placenta showed one partially detached cotyledon with adherent clots, the cord was eccentrically attached.

The puerperium was normal except for a temperature of 101 F thirty hours post partum, dropping to 99 the following day, and continuing normal thereafter. The baby nursed well and gained satisfactorily under routine premature care.

SUMMARY

A case of unusually early rupture of the fetal membranes at about the twenty-fifth week of pregnancy advanced to thirty-three weeks, and a living healthy infant was delivered by breech extraction. There was no evidence of amniotic adhesions, and no infection of cord umbilicus or endometrium. The pregnancy began within a few weeks after an abortion, and was also complicated by a slight premature separation of the placenta.

3 McQuarrie J. G. Fetal Death: a Study of One Hundred and Nineteen Deaths in a Series of Cases. J. A. M. A. 73: 1574 (Nov. 22) 1919.

AN INSTRUMENT TO DETERMINE THE DIFFERENCE
IN EXPANSION OF THE TWO SIDES OF THE
UPPER CHEST IN PULMONARY
TUBERCULOSIS

I. R. WAGNER, M.D. NEW HAVEN, CONN.
Surgeon (R.) U. S. Public Health Service

This instrument, which I have called "thora-meter," is built after the plan of the original caliper, with special features attached to the free ends. The arms of the caliper are curved slightly, with ends curved to point at right angles with the length of the arm. One arm is longer than the other, and has attached a pad of the ball and socket type, permitting free movement and conformity to the surface of the body. The other and shorter arm of the caliper has attached a measuring device, composed of a barrel with a movable rod passing through, controlled by a coil spring. This plunger rod passing through the barrel is calibrated for measuring expansion, and is held snugly against the surface by the coil spring, which permits free movement of the plunger during respiration. The caliper joint is made of wide wings with a thumb nut to hold the calipers rigid, and still allow

movement by forcing the arms wide apart or bringing them closer together to fit the thorax to be measured. The wide joint wings are intended as a brake to assist in holding the arms of the caliper at the distance apart desired. These wide joint wings may be calibrated for measuring the antero-posterior diameter of the chest.

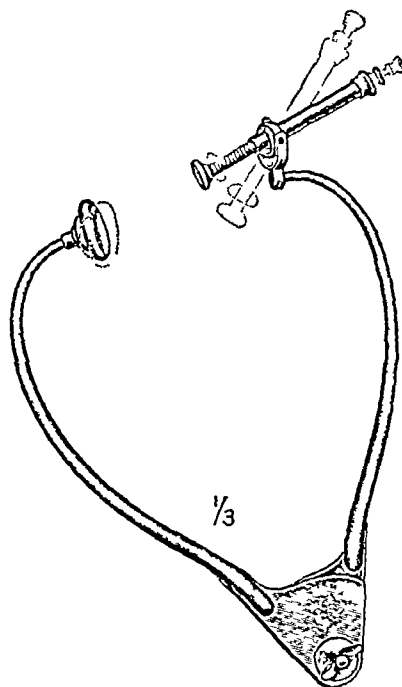
The instrument is simple and with a very little study of the information desired and the points of the instrument, proficiency in operation will be easily attained. I have selected as points of operation the fourth or fifth dorsal spine and second rib, about 2 inches from the margin of the

Instrument to determine difference in expansion of the two sides of the upper chest

sternum. The instrument is placed over the shoulder with the large circular pad pressed tightly against the fourth or fifth dorsal spine and with the plunger pad fitted snugly on the second rib, about 2 inches from the sternal margin. The patient is instructed to breathe, the operator watching the calibrated plunger, the measurements are carefully noted.

Then the instrument is changed to the opposite side, being placed over the corresponding points, and a careful reading of calibrations is made. The anteroposterior expansion as measured with the thora-meter multiplied by 3.1416 will not equal the circumferential expansion as measured by tape line, owing to the fact that thora-meter measurements are bone measurements, and the expansion is actual bone expansion, while tape line measurements take in muscle expansion as well as expansion of the bony thorax. In order to obtain the best service of this instrument, it is necessary to instruct the patient how to breathe. All men, and some women, after discarding corsets, use abdominal breathing. This can be overcome, and the patient taught to breathe with the entire thorax, with very few instructions.

U. S. Veterans' Hospital No. 41



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SATURDAY, AUGUST 23, 1924

ANAPHYLACTOID PHENOMENA AND MODERN THERAPY

Anaphylaxis is the term that has been restricted, in recent years, to that state of hypersusceptibility to a given substance which has been induced by a previous injection of the same substance. The reaction, so far as it meets the various criteria that students of immunology have employed to characterize the phenomenon, is limited to substances of a protein nature. In true anaphylaxis, which is highly specific for a given antigen, it is possible, for example, to demonstrate passive sensitiveness with the serum of sensitized animals. Amelioration of the attendant bronchial spasm can be brought about by proper use of atropin and epinephrin. The possibility that the observed symptoms are caused by capillary thrombosis or embolism must be excluded. Natural hypersusceptibility to nonprotein substances may occur, but this condition cannot be induced by a previous administration of such substances. Wells¹ has pointed out that even distention of the lungs in guinea-pigs, circulatory disturbances in rabbits, or splanchnic congestion in dogs, following intravascular injections of foreign materials, is not necessarily proof of a true anaphylactic reaction, each and all may be produced by materials or under conditions that surely do not involve the same processes that are responsible for the reaction which occurs when a small quantity of an otherwise harmless protein is injected into an animal that has been previously prepared at a sufficiently great interval of time, by injection of the same protein.

Several years ago, Karsner and Hanzlik² demonstrated that a considerable variety of chemically unrelated substances may produce what they termed "anaphylactoid" symptoms after intravenous injection, by virtue of their causing occlusion of the pulmonary capillaries by thrombosis or by agglutinated corpuscles or platelets. With such capillary obstruction there may occur a marked bronchial constriction, which causes

asphyxia and permanent distention of the lungs. This bronchial constriction, which has commonly been interpreted as proof of a true anaphylactic shock, differs from that of true anaphylaxis in not depending on a contraction of the bronchial musculature, which, they contend, is shown by the failure of epinephrin and atropin to influence the respiratory effects in the same way that they control anaphylactic bronchial spasm. A renewed investigation of the subject by Hanzlik and Karsner³ has confirmed their earlier experience and extended it to include numerous substances of current interest to physicians, because some of the materials have been more or less widely recommended for use in intravenous therapy. These chemically and physiologically unrelated products may produce similar symptomatic and histologic changes, and likewise well defined alterations of the blood. Capillary permeability may become enhanced, as witnessed by peribronchial and perivascular edemas, agglutination of blood formed-elements may bring about thrombosis, altered equilibrium of chemical components of the blood may induce symptoms of acidosis.

Into the heterogeneous category of materials that may incite such reactions fall a variety of "colloidal" solutions of iron, mercury, arsenic, antimony and protein, as well as extracts of animal tissues. In animal experiments, the intravenous effects apparently cannot be predicted from their physical and chemical properties or—and this is significant also—from their physiologic effects when given by mouth. Many of the agents studied by Hanzlik and Karsner are advocated to be used intravenously in place of oral and safer methods of administration. A protest⁴ against the threatening abuse of intravenous therapy has already appeared in *THE JOURNAL*. It may nevertheless be advisable to reiterate here that there seems to be little, if any, justification for the intravenous administration of such agents as hexamethylenamin, sodium iodid and sodium salicylate, because their ordinary systemic effects are readily and promptly obtained from oral administration. On the contrary, as Hanzlik has often pointed out, other and more detrimental effects may be obtained from intravenous medication. Thus, such an agent as acacia, injected intravenously, may be temporarily beneficial to one function but detrimental to others and to the organism as a whole. According to the most recent findings,³ even intraperitoneal injections of some of the substances that should not be used freely directly by vein are not without menace. Pharmacology and experimental therapeutics have established the value of numerous agents for which intravenous injection is relatively safe, and other methods of use may be unsuitable. The indiscriminate

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Numerous investigations of recent years have furnished indications that the normal processes taking place within and about the living cells of the body are carried out in fluids that are maintained constant in respect to reaction within rather narrow limits, as measured by hydrogen ion concentration. For the blood this is slightly alkaline, being represented by a reaction equivalent to pH 7.4. This constancy is made possible by the admirable series of regulatory devices of varied character that are at the disposal of the organism. Respiratory adjustments, kidney elimination and buffer substances are conspicuous among these. Acids are continuously formed in greater or lesser degree in the metabolism, so that they in particular are concerned in these regulatory functions. As Wilson¹ has pointed out, the tissues and blood must be protected against any great change in reaction during the period between formation and elimination of acid. The buffers in the tissues and blood constitute the great source of protection in this connection. The proteins and phosphates are probably the main buffers concerned.

In the discussions of acid-base balance, much consideration has naturally been given to those features that might be expressed as acidosis. Under conditions of abnormal acid production in disease as well as under certain physiologic conditions, such as severe muscular exercise, also resulting in increased elaboration of acid, it has been said that the organism may at times be embarrassed seriously in respect to the ability of the adjustment mechanism to maintain optimal conditions of reaction. The reverse condition of alkalosis, though recognized as an experimental possibility, has never been given the serious consideration accorded to acidosis as a possible clinical entity. It is important, therefore, to learn from investigations lately recorded² that alkalosis is a condition much more common than has ordinarily been supposed, and has often been overlooked by the clinician. When both the bicarbonate and the hydrogen ion concentration of the blood are ascertained, a reliable index of the acid-base balance is secured.

It has been pointed out that conditions of alkalosis have been neglected in the past for the reason that the clinical symptoms are not readily recognized or easily defined. Symptoms that may be noted, however, are headache, lassitude, nausea, vomiting, fever and, in some cases, tetany. Kast, Myers and Schmitz have furnished illustrations from the service of the New York Post-Graduate Medical School and Hospital of unquestionable cases of alkalosis that would be overlooked ordinarily unless laboratory methods of diagnosis were applied. Some of the instances involved patients receiving sodium bicarbonate for therapeutic purposes, usually in the treatment of gastric ulcer. These investigators remark that, in the past, sufficient caution has not always been employed in the therapeutic use of this chemical compound. With impaired ability to excrete alkali, relatively small amounts of sodium bicarbonate will lead to alkalosis. Not infrequently, we are further told, alkalosis appears to have been mistaken for acidosis, leading to alkali therapy, which aggravated the condition.

Alkalis have long had a vogue in the treatment of severe diabetes, particularly the acidosis and coma sometimes associated with them. Of late there has been a reaction against the too liberal use of sodium bicarbonate.³ In this connection, Kast, Myers and Schmitz have observed that ketonuria is not an infallible sign of acidosis, since it may exist in the presence of an alkalosis. On the other hand, instances of fatal diabetic coma without ketosis have lately been recorded in *THE JOURNAL*.⁴ Evidently, some of the traditional beliefs associated with the problems of alkali balance and alkali therapy need revision.

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There are some who have failed to detect this action, and others even who observed that the pulse became slower after alcohol was taken. The rate of the pulse is not a matter concerning which there can be a difference of opinion, and it can only be concluded that different subjects react differently to alcohol in this respect, while dose and dilution have probably some influence on the effect. There seems to be no doubt that a slight quickening of the pulse commonly occurs.

The report⁶ of the Advisory Committee of the Central Control Board (Liquor Traffic) of London, representing the carefully formulated opinion of scientific experts, charges that there is very good reason for believing that this effect, weak and inconstant as it is, is not due to a direct action of alcohol on the heart. It has been seen to occur when alcohol of sufficient concentration (50 per cent) was simply taken into the mouth and rejected without being swallowed. In this case, the quickening of the pulse lasted only a few minutes, whereas, if the dose was swallowed, the quickening lasted for approximately half an hour. It seems reasonable to attribute at least a part of the result to the continuance in the stomach of the irritating action of alcohol on mucous membranes, which must be the immediate cause of the effect seen when alcohol is held in the mouth. Although all are agreed that in greater concentrations alcohol is directly harmful to the heart, the deductions regarding the possible stimulant action have been decidedly divergent. To give a direct answer with respect to the cardiac musculature itself, it becomes necessary to make the test on the heart separated from the central nervous system. The organ should be performing a normal amount of work under experimental conditions in which all the factors that may influence this—the arterial resistance, the inflow of blood, the temperature—are kept constant, apart from any influence of the drug itself. When these conditions are fulfilled, as in the recent studies of Sulzer⁷ at University College, London, there is no evidence of any stimulant effect of alcohol on the heart in any doses. With concentrations of alcohol in the blood as low as 0.06 per cent, the only effect observed is an increase in diastolic and systolic volumes of the ventricles, this becomes more marked as the concentration of alcohol in the blood is increased. The action of alcohol on the heart muscle, as soon as any effect whatever is produced, is thus purely depressant. With higher amounts of alcohol, such as 0.3 or 0.4 per cent, there is a diminution in the output of the heart, and a considerable rise in venous as well as pulmonary pressure. In concentrations of from 0.1 to 0.2 per cent onward, alcohol causes the coronary vessels to constrict and to reduce the coronary flow. These investigations confirm what Newell Martin⁸ observed at Johns Hopkins University more than

forty years ago. As the British report properly concludes, no scientific ground has been discovered for any claim made on behalf of alcohol to practical value as a direct stimulant of the heart in cases of threatened failure of the beat. When it appears to promote recovery from fainting, it probably acts simply by virtue of its irritant action on the mucous membrane of the mouth and throat. The fact that the beneficial effect appears almost immediately, and long before any significant amount of alcohol can have been absorbed and carried to the heart, is evidence for this local and indirect nature of the action. Its use in these circumstances is, therefore, comparable with that of smelling salts, or the irritating fumes of burnt feathers traditionally employed for the same purpose. If, in conditions of more protracted weakness of the heart, the administration of alcohol has a beneficial effect, this must be attributed mainly to its mildly narcotic and sedative action, relieving the centers, which modify the action of the heart, from the disturbing influence of pain and anxiety. The promotion of a patient's comfort, the relief of mental strain, may be an essential element in the treatment of disease, and an important factor in recovery. It does not, however, justify the description of alcohol as a "stimulant" of the heart. In this direction, as in others, the popular idea that it is a "stimulant" proves on examination to be scientifically untenable.

THE HEALTH OF CHILDREN IN INSTITUTIONS

During childhood there is comparatively great susceptibility to certain types of diseases and to influences that may exert some retarding influence on growth and development. Some of these dangers are augmented by congestion of population and by systems of living that increase the possibility of contact infections. Probably these are some of the things responsible for the widespread impression that the institutional care of children is detrimental, or at least unfavorable, to health and proper nutrition. The difficulties seem to be accentuated further by the fact that the young who are consigned to the care of a sheltering institution are likely to come from homes or surroundings that are far from advantageous, indeed, such neglected young are frequently found to be physically deficient, if not actually the victims of incipient disease. In considering the fate of children consigned to institutions where group living prevails, rather than to so-called foster homes where the individual dominates, we may overlook the great progress that has been made in recent years in the management of institutional inmates. The methods of housing and sanitation have been improved in many parts of the world, the problems of nutrition and personal hygiene have been approached with due recognition of recent contributions to the sciences they represent. Hence a student of child

⁶ Alcohol Its Action on the Human Organism. London: H. M. Stationery Office, 1918.

⁷ Sulzer, R. The Influence of Alcohol on the Isolated Mammalian Heart. *Heart* 11: 141 (April) 1924.

⁸ Martin and Stevens. Studies from the Biological Laboratory of the Johns Hopkins University 2: 477, 1883.

welfare¹ has remarked that, in an institution where children are under full control day and night, it should be possible to eliminate malnutrition entirely, and the presence of a malnourished child among those who have been in the institution a sufficient time for study and treatment requires explanation. He asserts also that all correctional institutions for children, such as truancy and parental schools, should be so organized as to seize the first moment a child comes under their control to look into his physical condition. Much of the disciplinary difficulty with these children, we are further told, is due to bad physical condition, and surprising results in the way of improved behavior frequently follow improved nutrition and the removal of defects.

That such aspirations are not futile has been clearly indicated in two independent reports published during the past year. Holt and Fales,² who studied the children in a home and school for poor children in New York within the heart of the uptown business section in a building "dark and rather gloomy" but subject to good sanitary and medical supervision, noted remarkably satisfactory conditions. They remark that the impression is prevalent that children living in institutions decline in general health and vitality, and that their growth and physical development are inhibited. Holt and Fales' observations of these children show that this is not a necessary result, and that the contrary may be true. The carefully controlled life in a properly managed institution, the regular hours, the good food and the lessened chances of infection, because the children do not come in contact with other children as do those who attend public school, make it possible to keep these children in excellent health, in fact, in much better condition than children in most private homes.

Equally encouraging is the tribute to institutional possibilities paid by Katz and Gray³ in a review of conditions in a recently investigated large home for children in Boston. Despite the strict regimen, children of the poorest class, when under proper institutional care, are shown to catch up rapidly to normal children in physical respects. The longer they stayed in the institution, the larger was the percentage of children who were above the average in nutrition and development. This is not the story of an exclusive private home, it relates to an institution in which malnutrition is not a cause for exclusion, but rather for admission. The time has probably arrived for counteracting the impression that children living in an institution tend to decline in vitality, and that their development may be inhibited. There are evidently many places where health is splendidly safeguarded even in the absence of much that constitutes "home" to the child.

¹ Emerson W. R. P. *Nutrition and Growth in Children*. New York, 1922.

² Holt, L. E. and Fales, H. L. *Observations on the Health and Growth of Children in an Institution*, *Am J Dis Child* 26: 1 (July) 1923.

³ Katz, S. E. and Gray, Horace. *Health and Growth of Children in an Institution*, *Am J Dis Child* 27: 464 (May) 1924.

Current Comment

BRINCKMANN'S AMERICAN RHINE RUHR RELIEF

The medical profession is being circularized by one Rev. Helmuth M. Brinckmann, who describes himself as "Director" of the "American Rhine Ruhr Relief," with headquarters at 405 West One Hundred and Twenty-Fifth Street, New York. Mr. Brinckmann states that he is appealing to "several thousand physicians," each of whom he urges to send in "at least \$1.00." Just why Rev. Brinckmann circularizes physicians rather than preachers is not clear. A well known physician who has taken more than ordinary interest in the relief of suffering overseas asked Mr. Brinckmann for details regarding the collecting and transmitting of the "relief fund." Mr. Brinckmann replied that his credentials "were submitted to, and approved by church, state and municipal authorities" but, he added

"No one is actively associated with me in soliciting the funds. I myself superintend my mail campaigns, preach in churches and call upon individuals who have indicated their sympathy with my work."

On Mr. Brinckmann's own admissions, it behooves the medical profession to think twice before sending him contributions. The public, when called on to subscribe to laudable enterprises, has the right to expect that the money sent in will be handled by a disinterested and responsible committee that will prepare and publish an account of receipts and expenditures, audited by qualified accountants.

MUSCULAR WEAKNESS AS A SYMPTOM OF DIETARY DEFICIENCY

It is not likely that the pathologic conditions that have already become familiar to students of deficiency diseases are the only abnormalities of structure or function for which a lack of some essential dietary component can be held responsible. For the most part, the study of the problems of defective diet is too recent in its development to have encompassed the range of possibilities. Scurvy and rickets, beriberi and xerophthalmia are surely only a few of the disease entities that can be charged to faulty regimen. Nor is it likely that avitaminosis of one type or another represents the only condition that leads to deviation from normal nutrition and development. Mellanby¹ and his co-workers have noted that the structure and function of the voluntary muscles can also be greatly influenced by the dietary peculiarities that lead to unsatisfactory calcification of the bones. The supply of inorganic salts, of phosphorus and calcium, as well as of the fat-soluble vitamins, is here concerned. Mellanby asserts, for example, that it is easy in the case of growing puppies to produce all degrees of activity and lethargy, from extreme restlessness and great running speed down to absolute paralysis, by small changes in the diet. On the whole, the muscle changes, which are said to be detectable microscopically and by

¹ Mellanby, E. *Discussion on Nutritional Diseases in Animals*, *Proc Roy Soc Med (Sec Comparative Med)* 17: 19 (April) 1924.

chemical analysis as well as by the effect on the gross contractile power, run *par passu* with the osseous changes, so that defective bone calcification goes with weak muscles, and perfect bone formation with muscles of great strength and contractile power. Of course, as Mellanby suggests, such a relationship might be expected for teleologic reasons, for it insures that powerful muscles shall have correspondingly strong bony support. It may be recalled that McCarrison has emphasized the possible importance of changes in the musculature of the gastro-intestinal tract in connection with the use of faulty food. Thus, the horizon of the deficiency diseases is expanding.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Another Kind of Quack—W. B. Mason, Anniston, a negro, was arrested, August 9, for practicing medicine without a license, it is reported. Mason admitted that he had performed "many medicinal deeds" when his instruments were presented in court, but claimed he had neither received nor asked any fees. His greatest trouble in life, he said, is generosity, but when asked to cite a specific case his memory failed.

CALIFORNIA

Chiropractor Treats Smallpox—E. W. Davidson, Wilmar, a chiropractor, was recently fined \$100 for failing to report contagious disease, it is reported. It was brought out at the trial that Davidson treated two cases of smallpox.

Osteopathic License Revoked—The osteopathic license issued to Arthur E. Pike, Long Beach, has been revoked for the alleged use of "M. D." after his name. The report states that Pike acknowledged he had "bought his M. D. degree from a St. Louis medical college for \$100.00." This action, according to the report, was taken by the California Board of Osteopathic Examiners.

COLORADO

Hospital News—The board of directors of the National Jewish Hospital for the Treatment of Tuberculosis, Denver, has announced plans for the addition of an infirmary building to that institution.

ILLINOIS

Personal—Dr. William H. Baker, Quincy, has been elected president of the city board of health.—Dr. William S. Keister, director of the joint health activities of Charlottesville, Va., Albemarle County and the University of Virginia, has been appointed director of the health department of Decatur.

Chicago

Personal—Dr. H. Gideon Wells, professor of pathology at the University of Chicago, addressed the Northern Minnesota Medical Association, Duluth, August 5, on "The Relation of Heredity to Cancer."

Medical Arts Club—It is reported that a fifteen-story clubhouse for physicians and dentists, to be known as the Medical Arts Club, will be erected on Lake Shore Drive at Ontario Street. The first ten stories will be built next spring, comprising an auditorium, banquet hall, grill room, library, ballroom and 100 sleeping rooms. The building will be the home of the Chicago Medical Society and the Chicago Dental Society.

INDIANA

Hospital News—The new infirmary at Tipton, which was to have been built this year and for which \$75,000 in bonds have been sold, has been delayed until January, 1925.—Dr. Horace G. Read has been elected president of the Tipton County Hospital organization.

Faculty Changes at the University School of Medicine—The trustees of Indiana University have announced the following changes in the faculty of the School of Medicine, Indianapolis:

Dr. William F. Hughes, now a sociate professor of ophthalmology, to clinical professor of ophthalmology. Dr. Sidney J. Hatfield, associate professor of gynecology, to clinical professor of gynecology. Dr. Bernard J. Larkin, assistant professor of gynecology, to clinical professor of gynecology. Dr. George S. Row, associate in ophthalmology, to assistant professor in ophthalmology. Dr. Gustavus B. Jackson, associate in obstetrics, to Dr. Leonard A. Ensminger, associate in surgery. Dr. Cleon E. Nafe, as sociate in surgery.

The following assistants have been made associates: Drs. Carl Habich, gynecology; Wendell D. Little, surgery; Robert M. Moore, medicine; Ross C. Ottinger, gynecology; James O. Ritchy, medicine; Cecil I. Rudicell, medicine; Frank C. Walker, gynecology; James A. Wynn, medicine. The following have been appointed assistants: Drs. Daniel S. Adams, rhinology, otology and laryngology; Louis D. Belden, surgery; George W. Bowman, dermatology; Arthur E. Guedel, surgery; Russell R. Hippinsteel, pediatrics; Foster Hudson, obstetrics; Karl M. Koons, surgery; Roy V. Myers, gynecology; Richard Wynn S. Owen, surgery; Dudley A. Pfaff, surgery; and D. L. Smith, obstetrics.

State Medical Society Meeting—The annual meeting of the Indiana State Medical Association will be held in Indianapolis, September 24-26. With the approval of the council, the scientific committee has decided on the innovation, as far as this state is concerned, of having outside physicians furnish the program. The forenoons will be devoted to dry clinics and the afternoons to addresses. Wednesday and Thursday, one hour will be given to surgical clinics, another to medical clinics and the third to eye, ear, nose and throat clinics. The same division will hold in the afternoons for addresses. Friday afternoon will be given over to the sections. A large number of prominent physicians throughout the country are on the program. There will be the usual smoker and social evening, Wednesday, with Indianapolis physicians as hosts. At the public meeting Thursday evening the principal speakers will be a layman and a surgeon of national reputation. Physicians in good standing from outside the state, particularly those in adjoining states, are cordially invited to these meetings.

IOWA

Hospital News—The contract has been awarded for the erection of a \$115,000 building at the Burlington Hospital, Burlington.

Physical Examinations at State Fair—The state board of health and the Iowa Federation of Women's Clubs are cooperating to arrange for free health examinations at the Iowa state fair. A room has been completely equipped for this purpose in the women's and children's building.

KANSAS

Hospital News—Dr. Charles C. Keester, Wichita, will build a hospital at 1600 East Harry Street, to cost about \$15,000.

Dr. Uhls Sentenced—Dr. Kenneth B. Uhls, Kansas City, formerly head of a narcotic sanatorium at Overland Park, has been sentenced by Judge Farchild, it is reported, to twenty-five years in the Kansas prison at Lansing following his conviction on a charge of second degree murder in connection with the death of W. F. Gibbs (THE JOURNAL, June 28, p. 2124).

Acting Dean to Be Appointed—The state board of administration has authorized the appointment of an acting dean for the University of Kansas School of Medicine, Rosedale, and the appointment will be announced within a few days. It is reported that the chancellor has been authorized to proceed to a nomination to the board of a permanent dean as soon as possible but that no nomination is likely to be made until the beginning of the academic year. At an official meeting of the board and chancellor, August 7, a statement was authorized in part as follows:

The resignation of Dr. Mervin T. Sudler as dean has been in the hands of the chancellor and the Board of Administration for some time, but it was not officially accepted until Aug. 7, 1924, the first meeting of the board and the chancellor since July 21. The chancellor and board hold Dr. Sudler in high regard both personally and professionally, and appreciate his services to the medical school.

KENTUCKY

Personal—Dr. Derby H. Swengel, Paintsville, county health officer, has tendered his resignation, effective September 1. Dr. Swengel expects to return to his former home, Lewisburg, Pa., to engage in general practice.

Fined for Failing to Report—Nine physicians of Louisville, seven of them negroes, were arrested on warrants sworn to by the registrar of the bureau of vital statistics, and fined for failing to file birth certificates within ten days.

MAINE

Clinic for Crippled Children—It is reported that practically every physician in Augusta attended a clinic for crippled children at the Augusta General Hospital, August 2, and that fifty nine cases were examined. The Augusta Public Health Association, the Maine Public Health Association, the Rotary Club, the Parent-Teachers' Association, mothers' clubs and others cooperated in making the clinic a success. The clinic, which was entirely diagnostic, was conducted by specialists from other cities of the state, and was one of several which have been arranged by the Maine Public Health Association. A similar clinic will be held in Skowhegan, and another in Bangor, early in September.

MASSACHUSETTS

Hospital Bequeathed to Weymouth—The town of Weymouth has been bequeathed \$300,000 by the will of the late Labin Pratt, Dorchester, for the purpose of establishing a hospital at Weymouth Heights, the birthplace of the donor.

Investigation of Medical Service in Rural Regions—The legislature has directed the department of health to investigate the conditions existing throughout the state with respect to the maintenance of adequate health and medical service in sparsely settled districts. Dr George H Bigelow, Boston, chairman of the committee to make this investigation, has requested such advice and assistance as the public may be able to give. Facts or suggestions should be sent to the state department of health, State House, Boston.

Community Health Association Reduces Budget—A lack of funds has necessitated a retrenchment by the Community Health Association, Boston, which entails the discharge, September 1, of fifty nurses and a part of the executive staff, it is reported. The financial support of this association, formed by the amalgamation of the Baby Hygiene Association and the Instructive District Nurses' Association, has not kept pace with the growth of its work, which, last year, increased from 13,678 persons cared for to 16,436. The retrenchment means, it is said, that 480 fewer persons will be cared for by nurses each day. The mayor of Boston has agreed that the city will take over the baby hygiene work in Charleston, East Boston, and the north, south and west ends. In the fourteen years during which such work has been done among babies, the infant mortality in Boston has dropped from 1201 per thousand to 8249.

MICHIGAN

Typhoid at Midland—Eight cases of typhoid fever developed in Midland in one week, recently, it is reported.

Personal—Dr Joseph H Sherk, Midland, has been elected president of the city school board.—The director, U S Veterans' Bureau, has designated Dr Frank E Leslie to be in charge of the new Veterans' Bureau hospital for neuropsychiatric patients at Camp Custer, near Battle Creek. Dr Leslie has been in charge of Veterans' Bureau Hospital No 24 at Palo Alto, Calif, and will be succeeded there by Dr Parker G Borden.

University News—The following changes at the University of Michigan Medical School, Ann Arbor, have occurred recently. Dr Louis E Stern, instructor in the department of internal medicine, has resigned to enter general practice in California, Dr Nicholas M Alter, instructor in the department of internal medicine, has been appointed professor of pathology at the University of Colorado, Dr William A Smith, intern in neurology, has been appointed instructor. In the department of surgery, Dr Carl E Badgley has been appointed assistant professor vice Dr Le Roy C Abbott, resigned, Dr Howard B Baker, instructor vice Dr Frank E Curtis, resigned, and J Basil Hume, senior demonstrator of anatomy St Bartholomew's Hospital, London, has been appointed instructor for one year.

MINNESOTA

Minneapolis Delays Decision on Iodin—A decision on the question of treating the public water supply of Minneapolis with iodine for the prevention of simple goiter, which has been under consideration for some time, has been postponed thirty days in order that the council committee may further study the problem and citizens be given a further opportunity to present their views at hearings.

University Appointments—At a meeting of the administrative board of the University of Minnesota Medical School, Minneapolis, the following nominations were approved. Dr Frank W Stevenson, Minneapolis, as assistant in medicine, Dr Gordon R Kamman, St Paul, as assistant in nervous and

mental diseases, Dr Hendrie W Grant, St Paul, as assistant in ophthalmology and otolaryngology, Dr Axel S Noran, Minneapolis, as assistant in pediatrics. The resignation of Dr Arthur L Kusske, Minneapolis, as refractionist was accepted, and Dr Harold L Goss, Rochester, was nominated to fill the vacancy.

Society News—Dr L G Guyer, Nopemng, state inspector of sanatoriums, was elected president, and Dr Jacob Harry Bendes, Oak Terrace, vice president, of the Minnesota Sanatorium Association at the annual meeting, Thief River Falls, July 17. Dr Guyer addressed the association on "Heliotherapy and the Alpine Lamp Treatment in Pulmonary Tuberculosis."—At the annual meeting of the Northern Minnesota Medical Association, Duluth, August 5, Dr Edward L Tuohy, Duluth, was elected president, Dr John A Thibes, Brainerd, vice president, and Dr William W Hill, Bertha, secretary-treasurer (reelected). Brainerd was chosen as the next meeting place.

MONTANA

Personal—Dr Charles Nelson Leach, who has been conducting investigations for the Rockefeller Institute for Medical Research in the Far East for the last three years, is visiting Governor Dixon his father-in-law, at Helena.

State Medical Meeting—At the annual meeting of the Medical Association of Montana, Helena, July 9-10, Dr George McGrath, Hamilton, was elected president, Drs Thomas A Grigg Butte, John L Treacy, Helena, and Arthur C Knight, Philipsburg, vice presidents, Dr Elmer G Balsam, Billings, secretary-treasurer (reelected), Dr Creswell T Pigot, Roundup, delegate, and Dr Harmon T Rhoads, Choteau, alternate delegate. The next annual meeting will be held at Lewistown.

NEW JERSEY

President of State Society Resigns—Dr Archibald Mercer, Newark, who was elected president of the Medical Society of New Jersey at the annual meeting, Atlantic City, recently resigned that position on account of impaired health. Dr Lucius F Donohoe, Bayonne, first vice president, became the acting president of the society.

Personal—Dr Harold E Longsdorf, Mt Holly, has been appointed medical director of the Burlington County Hospital at Mt Holly to succeed the late Dr Elmer D Prickett.—Dr Wells P Eagleton, Newark, sailed from San Francisco, July 18, for a trip around the world by way of the South Sea Islands, Australia and India. He will return the latter part of December.—Dr Obadiah H Sproul, Flemington, celebrated his eightieth birthday, recently. Dr Sproul was president of the state medical society in 1894, and has attended every annual meeting except two in the last sixty years.—Dr Thomas J Smith, Bridgeton, who has been a member of the staff of the Bridgeton Hospital since its organization in 1898 has resigned.—Dr Charles B Kelley, Jersey City, has been appointed a member of the state board of medical examiners to fill the vacancy caused by the death of Dr John J Mooney.—Dr Lancelot Ely, Somerville has been promoted from major to lieutenant colonel in the Medical Officers' Reserve Corps.

NEW MEXICO

Report of Sanitary Engineer—The semiannual report of the sanitary engineer of the bureau of public health shows that there are thirty-eight municipal water supplies and twenty-one sewerage systems in the state. Two towns have voted bond issues to construct water systems and one to install a sewer system. Four other towns provided funds to extend and improve their water supplies. There are seven water supply systems and five sewerage systems maintained by mining companies for the use of their camps. Thus, forty-seven towns in the state have, or will have, protected drinking water and only twenty-seven will safeguard their sewage disposal. These systems are under the supervision of the state bureau of public health, which also inspects in cooperation with the federal government, water supplies maintained by railroads for the use of their passengers. A total of 120 inspections were made in the last six months with eighteen recommendations for improvements. The report shows that twenty public swimming pools are supervised by the state board of health. As distances in this state prevent shipping milk to the state public health laboratory for examination, the sanitary engineer recommends that a traveling laboratory, mounted on a small truck be provided for the purpose of examining water and milk supplies.

NEW YORK

Typhoid Fever at Port Jefferson, L I—A report August 14, states that in the preceding week thirty cases of typhoid fever were reported to the health department. The first cases were reported, August 8, and within twenty-four hours twenty cases had been reported. Local and state health officials are cooperating to determine the source of the epidemic. It is stated that a case of typhoid fever was discovered among the employees of a local dairy and that the milk supply from this dairy has been ordered discontinued.

Clinics for Poliomyelitis Victims—The state department of health held thirty-five clinics the first half of this year for the after-care of persons crippled by infantile paralysis a total of 655 patients attending. It is reported that there are 1795 patients under state supervision, of which 1,262 were attached since 1916, the year of the latest severe epidemic, and only 533 prior to that time. In addition to examination and treatment offered by the state department of health to these patients, provision has been made whereby apparatus, special shoes and braces may be obtained through the department on the partial payment plan, 173 pieces of apparatus were thus supplied during the first six months of this year.

Periodic Health Examinations—The New York State Committee on Tuberculosis is promoting its campaign for periodic health examinations by arranging appointments for examination by means of a printed card, the effectiveness of which has been shown at business men's clubs. About 80 per cent of the men at the luncheon meetings sign cards that have been placed at each plate for a definite appointment for a physical examination. The signed cards are returned to the secretary of the local committee, who arranges the appointment with the designated physician to whom a health examination blank is furnished. The cards will be kept on file by the secretary, and the signer reminded each year of his duty to call for his physical examination.

Infantile Paralysis at Syracuse—The two cases of infantile paralysis reported, August 13, at Syracuse, made a total of 63 cases since June 5. The state department of health states that infantile paralysis for 1924 seems to be definitely centering about the city of Syracuse. This city was comparatively free from the disease last year but constituted a well marked center in 1922. The initial cases were children of Italian families who lived within three blocks of the Erie Canal. It is interesting to note that the epidemic of 1916 in New York City began among Italian children who lived near the old Gowanus Canal in Brooklyn and likewise the epidemic of 1921 in Utica began among Italian children who lived near the old Erie Canal bed. A second focus of infection is developing in Oswego, where of the six cases reported up to August 1, four appeared to be children of Italian parents. Cases are appearing in considerable number much earlier than at any time since 1916 in both Oswego and Syracuse.

New York City

Physician Held—It is reported that Dr. Hadley T. Cannon, 29 East Eighty-Third Street and 1111 Madison Avenue, was held on \$3,500 bail August 8, charged with homicide in the death of Miss Maloney following an illegal operation. Dr. Cannon, who formerly practiced in Binghamton, was indicted there last October on a similar charge, but was released on bail and never brought to trial.

Information on Postgraduate Medical Education—The Clinical Bureau of Information of the New York Academy of Medicine has been collecting data from hospitals and clinics of Greater New York for a booklet for the guidance of physicians interested in the local facilities for postgraduate clinical study. The bureau has also taken over and is expanding the work started years ago by the New York Association for the Development of Postgraduate Medical Education. It plans to collect information with reference to opportunities for clinical postgraduate work in large cities of the United States, England and on the continent. Several of the foreign clinics are now regularly supplying the bureau with data as to their schedule of work and facilities.

Clinics to Care for Teeth—In a report recently published by the dispensary development committee of the United Hospital Fund, an appeal is made for preventive dental work among school children. The report states that there is an enormous amount of dental work needed in the city and that about nine-tenths of the school children do not brush their teeth daily. It is estimated in the report that to meet the dental needs of New York City would require 12,000 dentists working full time throughout the year, whereas the city has 5,000 dentists. The most serious need shown by the report is clinics for

school children in which preventive dentistry is done. The second need is for extending dental service through organized clinics that would do work at cost for self-supporting patients on a basis of service rather than of charity. There are at present only about 100 dental clinics in this city, mostly small and confined to special kinds of work. The report was written by Michael M. Davis, Jr., and Clare Terwilliger of the staff of the committee on dispensary development and is endorsed by a committee of dentists and other specialists and by the oral hygiene committee of New York.

Health Service for the Preschool Child—Plans for a health service for children between 2 and 6 years of age have been completed by the New York Association for Improving the Condition of the Poor. They are based on plans used in the Mulberry district, where to reach children likely to enter school in the autumn, the school principals of the district sent to the Association for Improving the Condition of the Poor the addresses of all children of preschool age who had brothers and sisters in the schools of the district. The association offered to provide follow-up nursing for such children referred to them. The health department has assigned one of its physicians to the Mulberry Health Center three times a week. Examinations were conducted for six weeks beginning May 1. Of 700 children referred to the health center from the school district 612, or 79 per cent, were given a complete physical examination and 236 were ready for admission to schools in the autumn. Of another group of 593 children who entered the schools and who had no older brothers or sisters in school only fourteen had been referred to the association for examination. This plan not only provides for the preschool child but is a help to the board of education and to the health department.

NORTH CAROLINA

More Asheville Physicians Arrested—It is reported that Dr. George W. Purcfoy, Dr. Morgan P. Moorer and Dr. Ptolmey P. Chambers, all of Asheville, have been arrested for violation of the Harrison Narcotic Law since the raid of July 31, at which time federal agents arrested three other physicians on a similar charge (THE JOURNAL, August 9, p. 449).

OHIO

Smallpox at South Solon—It is reported that nine persons, members of two families which occupy the same house, are ill with smallpox at South Solon.

Cardiac Clinic—The Marion County Medical Society is making arrangements for a clinic on "the prevention of heart disease," to be held at Marion, October 7, at which Dr. Filmore Young, Marion, and his associates will present fifty cases of heart disease. Dr. S. Calvin Smith, Philadelphia, and others out of town, will be in attendance at the clinic.

Charges Preferred Against Chiropractors—Frank L. Dorsey, examiner for the state medical board, it is reported has filed affidavits against the following chiropractors of Portsmouth for practicing without a license: W. H. Spring, O. A. Knechtly and his wife, and D. D. Owen. The Knechtlys and Owen were arrested about a year ago on similar charges.

Physician Arrested—It is reported that Dr. John F. Holtz, Shelby, was arrested, July 28, by state prohibition agents for illegally issuing prescriptions for intoxicating liquor, and that the majority of the prescriptions in question were filled by a drug store in Chicago for trainmen who, in some cases, were not the men to whom the prescriptions were originally issued.

Personal—Dr. Walter S. Weiss, Jefferson, has been reappointed county health officer of Ashtabula County for a term of two years.—Dr. James R. Echelbarger, Ottawa, has been appointed coroner of Putnam County to fill the vacancy caused by the death of Dr. Albert F. Sheibley.—Mr. Carl A. Brimmer, formerly assistant superintendent of the Toure Infirmity Hospital, New Orleans, has assumed the duties of superintendent of the Mansfield General Hospital, Mansfield.

OKLAHOMA

New Medical School Building—A building is being erected for the University of Oklahoma School of Medicine at Norman, which, it is expected, will be ready for occupancy late in November. It will be Gothic, three stories high, of concrete, brick and Bedford limestone, and will house, on the first floor, a museum and library, bacteriology and pathology laboratories and lecture rooms, on the second floor, laboratories and offices for physiology and biochemistry, and, on the third, laboratories for gross and microscopic anatomy. Each

department will have research rooms and the equipment of the entire building will be modern and complete. This is the first unit of a three unit structure that will be completed when funds are provided.

OREGON

Hospital News—A new two-story addition will be erected to the Portland Sanatorium, Portland, at a cost of \$15,000. The new addition will conform to the design of the original building.

PENNSYLVANIA

Personal—Dr. Hamilton C. Wallace, Pottsville, has been appointed president of the board of health to succeed Dr. Henry A. Dirschedl.

Chiropractor Jailed—Walter B. Martindell, a chiropractor of Bristol, was recently fined \$500 and sentenced to serve six months in the Bucks County jail for practicing without a license. About two years ago, Martindell was fined \$300 on a similar charge. In refusing Martindell a new trial after his second conviction, Judge Ryan said: "My duty to the commonwealth and law of this state compels me to send you to jail. I think any intelligent man would realize that the law under which you have been convicted in this state is constitutional, especially when the highest court of the land upholds the decision."

Smallpox in Pittsburgh—Two deaths from smallpox in Pittsburgh, August 7, made a total of fifteen for this year. Due to the improvement in the smallpox situation in the city, it has been decided not to make further use of warning signs and not to continue more than six vaccination squads which will be confined to the neighborhood in which cases appear. The twenty vaccination clinics will be continued and extended to outlying localities, if necessary. The Allegheny County Medical Society's bulletin issued in behalf of the vaccination campaign shows that of the eighty-eight cases of smallpox admitted to the Municipal Hospital up to July 31, eighty-one of the patients had never been vaccinated.

Philadelphia

Hospital News—Ground was broken, August 4, for the new Emma Shaperkottter Maternity Wing of the Women's Homeopathic Hospital, Twentieth Street and Susquehanna Avenue. The wing, which will be three stories high and contain forty-one beds, was named after a former treasurer of the hospital, and will cost about \$250,000.

Personal—Dr. Francis V. Gowen, Philadelphia, has been appointed instructor in laryngology in the Graduate School of Medicine of the University of Pennsylvania.—Dr. Elizabeth G. Bradt has been elected superintendent of the Woman's Southern Homeopathic Hospital.—Dr. Leopold S. Vaccaro has been made official chevalier of the crown of Italy by the king, in recognition of his services to that country. Dr. Vaccaro is director of the Italian Child Clinic, Tenth and Kimball streets, an instructor at the University of Pennsylvania School of Medicine, and a member of the staffs of the Pennsylvania, Babies' and Methodist hospitals.

RHODE ISLAND

The Hamilton Bill—The house of representatives of Rhode Island has passed a bill amending the present law so that children 14 years of age may be examined by the superintendent of schools, and, if found incapable of making further educational progress in school, and if physically fit, may receive permits to work. This, the Hamilton bill, was reported favorably by the committee on education in spite of opposition, at a public hearing, of many welfare organizations and many prominent persons. At the last meeting of the house of delegates, the Rhode Island Medical Society unanimously passed a resolution condemning this bill. The *Rhode Island Medical Journal* (August) states that if the Hamilton bill is passed, it will be a step backward, and a definite move on the part of the state to shirk certain responsibilities. A better plan, the journal says, would be to follow the suggestions of the Peck bill which provides for special courses of training for backward children along the lines suited to their capabilities with a view to making them self-supporting citizens.

SOUTH CAROLINA

City Sells Its Laboratory—The Purity Laboratory, Greenville, has been sold by the city board of health to private interests. The laboratory, established more than a year ago, was inaugurated with the view of furnishing scientifically prepared foods for infants, as well as general dairy products.

The sale was undertaken after the board of health had heard complaints from dairymen against the city for engaging in business in competition with citizens.

Mortality Statistics 1923—The Department of Commerce announces that the 1923 death rate for South Carolina was 1,185 per hundred thousand population as compared with 1,202 in 1922. This decrease in 1923 is largely accounted for by the decrease in the death rates from malaria, with a rate of 15 in 1922 compared with 29 in 1922, pellagra, with a rate of 19 as compared with 25 in 1922, typhoid fever, with a rate of 18 as compared with 23 and homicide, with a rate of 11 as compared with 14. Notable increases in 1923 appear in the death rates from measles from 1 to 12, whooping cough, from 8 to 15, and automobile accidents, from 4 to 7.

TENNESSEE

Personal—Dr. Stanley R. Teachout, Nashville, was elected chairman of the county board of health at a reorganization meeting, July 26.

The Knoxville Epidemic—The epidemic of typhoid fever in Knoxville, it is reported, had on August 3 amounted to seventy-nine cases and five deaths. The city health officer, Dr. Marvin F. Haygood, is reported as saying that the seriousness of the situation is not understood and that placards on springs have been torn down and the water used regardless of warning. The city has purchased typhoid vaccine for 6,000 persons and has funds available to buy more.

TEXAS

Typhus Fever—According to *Public Health Reports* the state health officer of Texas reported nineteen cases of typhus fever during the week ended, July 12. There were two cases reported from Rio Grande City, July 21.

VERMONT

Personal—Dr. James Haylett Moretown, who recently celebrated his eightieth birthday, was presented a loving cup by his friends in memory of his fifty-five years in medical practice.

VIRGINIA

Branch Laboratory at Harrisonburg—The state board of health has opened a branch laboratory at Harrisonburg which is operated jointly with the Rockingham Memorial Hospital. It is supported by funds from the hospital, from the state board of health and from the International Health Board. All kinds of work, except the Wassermann test, that is done at the central laboratory, Richmond, will be done at the branch at Harrisonburg.

Personal—Dr. Robert Bruce James, Danville, has been appointed a member of the board of visitors of the Virginia Military Institute at Lexington for a period of four years.—Dr. Robert H. Courtney, Richmond, has been appointed a member of the governor's advisory board for mental hygiene.—Dr. Charles Phillips, formerly professor of pathology at Wake Forest College School of Medicine, Wake Forest, N. C., has been appointed professor of pathology at the Medical College of Virginia, Richmond.

Children's Clinic Opened—The Children's Memorial Clinic, Richmond, was formally opened, August 7, with Dr. Basil B. Jones, medical director and head of the pediatric department. The clinic has been organized to carry into effect recommendations in the child welfare laws passed by the General Assembly, 1922, which provide that children under the care of institutions be given a thorough mental and physical examination. The clinic has therefore a pediatric and a neuropsychiatric department. The Commonwealth Fund which cooperated with the social agencies of Richmond and Virginia in organizing the clinic, will provide \$12,000 for the first annual budget. The clinic will make possible the examination of every school child as well as those committed to an institution, and will, in fact, be a clearing house for children's health problems for Richmond.

WISCONSIN

Library Offer Declined—The *Wisconsin Medical Journal* says that a tentative offer to present the medical library of 17,000 volumes of the Milwaukee Academy of Medicine to the Milwaukee Public Library has been declined. The city considers that it could not adequately house these volumes.

Aliens May Take State Board Examinations—According to an opinion of the attorney general, July 28, the state board of medical examiners cannot enact a rule to exclude alien

physicians from taking the examination in this state He said in part

Neither do I find any statute which expressly or through implication gives the board the power to enact a rule requiring a practitioner to be a citizen of the United States The rule above referred to is in excess of the powers granted to the board in effect it would be legislation on that subject and no legislative powers have been or can be delegated to an administrative board

Personal—Dr Ebba A Dederer, Rome, N Y, has been appointed superintendent of the Wisconsin Industrial Home for Girls at Tavcheedah by the state board of control Dr Dederer has been connected with the Rome State School for Girls in New York, and will assume her new duties, September 1—Dr Carl Arthur Hedblom of the Mayo Clinic, Rochester, Minn., has been appointed chief surgeon of the Wisconsin General Hospital, and professor of surgery at the University of Wisconsin Medical School, Madison Dr Hedblom, who has been in charge of thoracic surgery at the Mayo Clinic, graduated from Harvard in 1911 and received a Ph D degree from the University of Minnesota in 1920—Dr Richard F Werner of Eau Claire has presented to the town of Sampson a 13 acre park on Round Lake—Dr George W Harrison, Ashland, has been appointed county physician to succeed Dr Adellon Andrus

Attorney General Upholds Prohibition Commissioner—In a recent opinion the attorney general upheld the rulings of the prohibition commissioner with respect to permit fees for the purchase, prescribing and use of alcoholic beverages The commissioner, according to this opinion, is acting within the law in charging a permit fee of \$10 for the privilege of issuing prescriptions, another \$10 for the privilege of purchasing liquor for emergency medical purposes, and another \$10 for the privilege of purchasing alcohol for other than sterilization purposes Counsel for the State Medical Society contended that purchasing liquor for emergency medical purposes was in effect, the same as issuing a prescription, and that one \$10 fee should cover both privileges This contention was denied The state medical society at the convening of the next legislature, will make an effort to change the state law to conform to the federal law on the subject

CANADA

Gift to Kingston Hospital—The governing board of the Kingston General Hospital has announced that by the will of the late Charles Sandwith Campbell, a lawyer of Quebec, the Kingston General Hospital has been bequeathed about \$300,000 for the extension and maintenance of that institution

Toronto Academy of Medicine—Following the last annual meeting, the Toronto Academy of Medicine entered its eighteenth year with a total fellowship of 756, of which 642 are resident fellows, and an annual income of more than \$10,000 Its library contains 15,150 volumes, an increase of 1,400 during the year

GENERAL

Personal—Dr Joseph F Montague, New York secretary of the American Proctologic Society, returned, August 6 from London where he read a paper before the proctological section of the Royal Society of Medicine on "Pruritus Ani"

Funds for Antivivisection Propaganda—According to *Colorado Medicine* the New England Anti-Vivisection Society has received in the last twenty-seven years more than \$78,000 from twenty-one different legacies All but one of the legators were women

Hospital Expense Record—The average daily cost per patient in 1923 at the City Hospital, Indianapolis was \$3.50 a sum at least 60 cents lower than that of any other hospital of the same classification in the country, according to a report of the superintendent, Dr Cleon A Nafe The daily average number of patients was 329 and 66 per cent of them were on a charity basis

No Chemical Exposition This Year—The International Exposition Company, under whose management the Exposition of Chemical Industries has been held since 1915 has announced that it was decided last year to skip 1924 and to hold the next chemical exposition in the Grand Central Palace, New York, September 28-Oct 3, 1925 From the inquiries received, it appears that many persons are of the opinion that an exposition will be held this year

Examination Date Postponed—The U S Civil Service Commission announces the postponement from August 20 to Sept 20, 1924 of the closing date for the receipt of applications for the competitive examination for physicians for filling vacancies in the U S Veterans Bureau throughout the states of Missouri, Kansas Oklahoma and Arkansas at

entrance salaries ranging from \$2,400 to \$5,500 a year Information concerning this examination can be obtained from the secretary, Ninth Civil Service District, St Louis

Fund for Museum in Yellowstone Park—A grant of \$75,000 by the Laura Spellman Rockefeller Memorial has been made to the American Association of Museums as custodian for a museum in Yellowstone National Park \$50,000 of which will be for a building, \$10,000 for equipment \$10,000 for personnel for the building for three years, and \$5,000 for the expenses of the committee It is expected that the National Park Service, during the initial period of three years will gradually absorb the program The museum building will be designed to harmonize with the administration and postoffice building now under construction by the government and there will be four main groups of exhibits geologic, zoologic, botanic and ethnologic

Annual Safety Congress—The thirteenth annual safety congress of the National Safety Council will be held at Louisville Ky September 29-October 3 Among many others, the following addresses will be presented "Industrial Health as a Purchasable Commodity" Dr Clare F N Schram, medical director Fairbanks Morse and Company, Beloit, Wis, "Health Education of Our Foreign Families" Dr Amos W Colcord Carnegie Steel Company, Clairton Pa, "How to Make a Sanitary Survey of an Industrial Plant" Dr Charles L Ferguson, Shelby Shoe Company, Portsmouth Ohio, Report of Committee on Benzol Poisoning," Charles Edward A Winslow Dr P H, New Haven Conn, "Prevention of Lead Poisoning" (roundtable discussion), Dr Wade Wright, assistant medical director, Metropolitan Life Insurance Company, New York, and Frederick L Hoffman, Babson Institute, Wellesley Hills Mass, "How a Medical Department May Contribute to Safety in the Chemical Industry" Dr Benjamin J Slater, Eastman Kodak Company, Rochester, N Y

Southwest Fall Clinical Conference—The conference this year will be held in Convention Hall, Kansas City, Mo, October 13-18 It will include meetings of the Medical Association of the Southwest October 13-14, the American Child Health Association October 14-16, and the Kansas City annual fall conference The plans comprise clinics in the morning at hospitals, scientific programs each afternoon and public meetings in the evening There will be a combined meeting Tuesday evening October 14, of the Medical Association of the Southwest and the American Child Health Association, with Secretary of Commerce Herbert Hoover, president of the American Child Health Association, presiding President George E Vincent, Rockefeller Foundation, New York and Surg-Gen J H Cumming, U S Public Health Service will speak On Thursday evening, October 16 Surg-Gen Merritt W Ireland U S Army, will address a medical military public meeting Distinguished guests from various parts of the country will take part in the scientific program There will be an unveiling of a bronze tablet at the Bell Memorial Hospital in memory of Lieut William T Fitzsimmons Medical Corps U S Army, by Surgeon Generals Ireland and Cummings Lieutenant Fitzsimmons was the first American officer killed in the World War The U S Army General Hospital, Denver, is named in his honor

Misleading Conclusion Concerning Mortality—For some time after 1910 there was comment about an increase of the death rates in middle life over the figures for 1900 in which it was said that the strain of modern ways of living was taking a heavier toll than formerly among people in the prime of life That such conclusions may have been premature is indicated by facts collected by the Metropolitan Life Insurance Company on the mortality in New York state between the ages 45 and 64 years for the period 1900 to 1922 These facts show that for this age period there was a drop of 10 per cent in the death rate for males and of 11.6 per cent for females While most of the improvement in the death rates at this age division seems to have been due to the lowered mortality from tuberculosis and pneumonia, further decline in the death rate at this life period may be expected from the remarkable reduction in the last twenty years in acute infections among young people As these persons enter the age period beyond 45 there will be fewer damaged hearts, blood vessels and kidneys and, consequently, lower death rates from endocarditis and other results of sepsis The practice of identifying and treating focal infections and the campaign for periodic physical examinations will make for further gains at this age period These facts covering a twenty two year period show that misleading conclusions can be drawn from insufficient data which cover only parts of a calendar period

FOREIGN

Medical Congress of Latin Peoples—A committee headed by the dean of the Paris medical faculty is now at work on an Inter-Latin Nations Medical Congress to convene in June, 1926 probably at Paris. The official addresses will be on medicosurgical topics requiring laboratory aid.

The Medical Meetings at Innsbruck in September—The German Pediatrics Society convenes at Innsbruck, September 18-20. "Tuberculosis in Children" is the subject chosen for discussion. The eighty-eighth annual meeting of the German Society for the Advancement of Science, the Naturforschender Congress, opens, September 24, with a scientific exhibit in connection.

Ninetieth Anniversary of the Antwerp Medical Society—The gala meeting on this occasion was distinguished further by the celebration of the fiftieth professional anniversary of Dr. Van Wyck, who was presented with a souvenir volume containing the scientific works that had been published by thirty-two members of the society. Professor Gunzburg presided at the meeting and the concluding banquet.

The Internal Research Institute at Davos—In the fiscal year just closed twenty-seven research workers took advantage of the opportunities afforded by the Davos Forschungsinstitut in charge of Professors Loewy and Dorn. The work done was mainly in the lines of chemistry and physiology, and some of the reports have already been published. After Oct. 1, 1924, there will be a few posts vacant.

The Charcot Centennial—The centennial of Charcot coincides with the twenty-fifth anniversary of the founding of the French Societe de neurologie, and is to be celebrated by the Reunion annuelle de neurologie, announced for June, 1925. Two topics have been selected for discussion: "Migraine," to be introduced by V. Christensen of Copenhagen, and Pasteur Vallerv-Radot of Paris, and "Charcot's Disease" by V. Neri, Bologna, Van Bogaert, Antwerp, and I. Bertrand, Paris.

Ireland's Physicians Want More Pay—At the recent annual meeting of the Irish Medical Association, the president, Dr. William O'Sullivan, Killarney, drew attention to the small pay of the dispensing physician in Ireland, it is reported. He said that they were treating more than 2,000,000 people in the Free State under the Medical Charities Acts, for which they received about \$80,000, and that no other country in the world paid so little. The association passed a resolution expressing the hope that no change would be made in the system of medical registration in Ireland which would interfere with the rights of qualified physicians to practice in Great Britain and its dominions.

Personal—Mr. R. W. Harris has been appointed, by the board of management, secretary of the London School of Hygiene and Tropical Medicine. Mr. Harris was formerly an assistant secretary of the ministry of health. Sir John Bland-Sutton, president of the Royal College of Surgeons, sailed from Liverpool, August 9, for New York. Prof. A. Martinez Vargas, rector of the University of Barcelona, and E. Suñer of Madrid have been elected corresponding members of the Paris Societe medicale des hopitaux. Dr. Casares, dean of the pharmacy medical faculty at Madrid, has had an honorary degree conferred on him by the University of Munich. The university authorities at Vienna have decided that Professor Hochenegg is not to be disciplined for his statement in a lecture in regard to the prevalence of fee-splitting in Vienna, as the organized profession demanded. The university authorities stated that they considered that Hochenegg's statements had not been made heedlessly, and that it is within his province to discuss ethical questions with his students.

The Schiffrs Case—The *Scalpel* of Brussels publishes, by legal decree, the decision in the suit brought by Professor Schiffrs of Liege in the Seine civil court against Professors Lannois, Lermoyex, Moure and Sebilleau, and decided in his favor. In 1909, the defendants wrote to the plaintiff asking him to collaborate in a manual on otorhinolaryngology, saying that his name would appear on the title page. When the first volume appeared, his name was not on the title page, and the articles he had sent for the second volume were returned to him, as it had been decided to use only the work of French writers. The court decreed that the defendants must recall the copies of the first volume that had been issued, and substitute a title page bearing the name of Schiffrs. Also, that the articles written by the plaintiff at the request of the defendants must be inserted in the second volume now under way, and that the name of Schiffrs must appear on

the cover. The defendants were assessed the costs of the suit, and of the publication of the decree in full in two Belgian medical reviews or journals selected by Schiffrs.

Cost of Disease in India—Christophers, in the *Indian Medical Gazette*, says that, among the 360,000,000 people in India, 7,000,000 die annually. In England, 530 of every 1,000 persons born reach the age of 50, but in India only 186 reach that age. The cause of this difference is the incidence of disease in the early life periods. There is a loss of twenty-one years' expectation of life in the first year of existence in India, and a loss of nineteen years in the age period from 3 to 5. In the malaria outbreak in the Punjab in 1908, 20,000,000 people were simultaneously affected, of whom a quarter of a million died. Analyzing the report of the public health commissioner for 1921, the author says that cholera, smallpox and plague caused 600,000 deaths, diarrhea and dysentery, 200,000 respiratory diseases, 300,000 while "that convenient dump for undiagnosed maladies," the fevers, accounted for nearly 5,000,000. He points out the penalty the country pays for a bad sanitary reputation, and says that the important matter seems to be that the government should hold enlightened views as to what should be done to justify its trust so far as the prevention of disease is concerned. But no government, however enlightened, can combat disease without knowledge and were it prepared to spend vast sums on public health its efforts would be nullified without the contributions of medical research on which sanitation and medical relief are based, and without which they are powerless to advance.

Deaths in Foreign Countries

Edmund Comer Board, Bristol, Ireland, formerly lecturer on forensic medicine and president of the Bristol branch of the British Medical Association, aged 85.—**Dr. E. Fidanza**, medicolegal expert, Buenos Aires treasurer for thirty years of the Argentine Medical Association and of the various medical congresses in Argentina.—**Dr. J. Gorrochategui**, surgeon inspector of the Argentine navy. He accompanied the Nordenskiöld polar relief expedition, and during the World War was detailed to the U. S. North Atlantic fleet.—**Dr. A. R. Cohen** of Amsterdam, founder and long president of the organization formed to improve conditions in contract practice in the Netherlands.—**Dr. A. Opisso**, Madrid, medical collaborator for many years on a local daily.—**Dr. J. Escat**, professor of urology at the University of Marseilles.—**Dr. Leo Stuckey**, surgeon in charge of the Obuchow and later of the Alexander Hospital at Leningrad, author of numerous works on surgery, has been shot by the brother of a girl who died from uremia five days after an operation for chronic appendicitis. The parents had brought suit against him, but it had been dismissed as there was nothing to incriminate the surgeon.—**Dr. Rowe**, physician in charge of the Gorborsdorf Sanatorium, was one of the group of two officials and two private patients who died during a recent wholesale poisoning with paratyphoid bacilli from a dish made with strawberries. Nearly 240 persons were affected.

Government Services

Veterans' Bureau Appointment

Dr. M. B. MacMillan has been appointed, by the director of the Veterans' Bureau, community manager of Rehabilitation Center No. 2, Perry Point, Md. Dr. MacMillan was director of field hospitals in France with the forty-second division, and served in the Spanish-American War with the army of occupation in Cuba.

Trainees in Military Camps

The war department has announced that 33,544 trainees have been in attendance this year in the various citizens' military training camps conducted throughout the United States. The total in 1923 was 24,000, 22,000 in 1922, and 11,000 in 1921.

The number this year from each corps area was: First corps area, with headquarters at Boston, 2,747; second corps area, New York, 4,612; third corps area, Baltimore, 3,820; fourth corps area, Atlanta, 3,869; fifth corps area, Columbus, 3,956; sixth corps area, Chicago, 3,605; seventh corps area, Omaha, 4,748; eighth corps area, San Antonio, 3,254; and ninth corps area, San Francisco, 2,933.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 28, 1924

Clean Milk

The results of several years' research work into the methods of handling milk supplies are contained in a booklet of the ministry of agriculture, just published. Experiments with grade A (certified) milk, or milk from cows that have failed to react to the tuberculin and bacteriologic tests, have shown that under ordinary conditions it may be expected to remain sweet for from two and a half to nine and a half days from the time of milking. This supports the view that a delivery once a day should suffice, even in the large cities, but with milk of a lower grade it is admitted that, owing to methods of handling and the length of journeys, difficulties may arise in hot weather. To meet these, it is suggested either that there shall be more deliveries so as to insure that consumption in a consumer's house shall have ceased when the milk is not more than thirty-six hours old, or that there shall be more efficient cooling at the farms and during transit. The question of transit raises the whole problem of the cleanliness of utensils for some of the troubles of the dairy farmer in this respect are due to the milk dealer, whose duty it is to see that empty cans are adequately washed and steamed before they are returned. Of 500 empty cans tested on a station platform, 221 were clean and sweet, 123 contained no milk but had an "evil smell," and 156 either contained milk or were badly washed. This investigation proves that the present methods of washing and cleansing cans are inadequate, and are therefore a cause of loss of milk through souring in transit. The importance of clean milk, not only in the ordinary trade, but also in allied industries, is emphasized in the report of some studies in cheese making. In 1913 it had become evident that "dirt" organisms were at the root of the discoloration of Stilton cheese, and later work showed that yeasts were the cause of spoiled condensed milk, and that yeasts acting in combination with bacilli, which were capable of reducing lactose were the cause of fruity whey and also of one form of gassy change in Cheddar cheese.

The Health of London

In his report for 1923, Sir William Hamer, health officer for London, says that the year 1923 was remarkable for having the lowest death rate (11.4) ever recorded in London. The infant mortality rate was even more exceptional, as it was only 61 per thousand births, a considerable fall from 75, the rate of the preceding year, which was itself a record rate. But the marriage and birth rates fell markedly.

Marriage and Birth Rates for London

	1920	1921	1922	1923
Marriage rate per thousand population	22	19.5	18.4	17.2
Birth rate per thousand population	26.4	22.1	20.9	20.1

Thus, in the four years since the war, the marriage rate has fallen by 22 per cent, and the birth rate by about 23 per cent. It is fair to add, however, that the rates for 1920 were both abnormally high. The highest birth rate is that for Shoreditch, which in 1923 was 27.1. The lowest (excluding the city of London) is Westminster. The sharpest decline in the birth rate between the three-year periods 1911-1913 and 1921-1923 occurred in Fulham (23.4 per cent), the next largest in Bethnal Green (21.4 per cent), and the smallest in Hampstead (11 per cent). If the boroughs are grouped according to social condition as shown by the proportion of children of

school age scheduled for attendance at elementary schools, it is found that the decline in the birth rate and infant mortality rate is greatest in those boroughs in which the proportion of children scheduled is highest. Thus

Social Group	Decrease in Birth Rate Per Cent	Decrease in Fertility Per Cent	Decrease in Infant Mortality Per Cent
1	9.8	14.1	23.3
2	13.3	15.5	30.6
3	16.5	14.4	36.2

The low death rate among infants is ascribed to "the absence of epidemic influenza and a mild winter." Hamer emphasizes the influence of elementary education on the infant death rate. He declares that "the mother may be regarded, indeed, as practically constituting the environment of the infant." An educated mother is better able to care for her child than a mother who has not enjoyed this advantage. The following mortality table shows how enormously health and fitness have improved since 1841.

Mortality Table, London*

	At Ages											
Males	0	5	10	15	20	25	35	45	55	65	75	85
1920 1922	100	100	100	100	100	100	100	100	100	100	100	100
1841 1850	244	333	245	225	239	248	226	185	163	170	136	121
Females	0	5	10	15	20	25	35	45	55	65	75	85
1920 1922	100	100	100	100	100	100	100	100	100	100	100	100
1841 1850	258	330	238	218	234	265	264	214	193	170	149	133

* The figures for 1920-1922 are taken as representing 100.

Life Expectancy at Birth Now and at Earlier Periods

Period	Life Expectancy (Years)	
	Males	Females
1841-1850	34.6	38.3
1851-1860	36.4	40.4
1861-1870	35.7	39.9
1871-1880	38.0	42.4
1881-1890	40.1	44.5
1891-1900	41.2	45.4
1901-1910	47.2	51.9
1911-1912	49.5	54.5
1920-1922	53.8	59.1

Thus, in the course of eighty years the Londoner's lifetime has been extended by more than twenty years—males by 19.2 years and females by 20.8 years.

Hamer has followed the course of influenza in London with care, and says that during the last two years, at any rate, influenza in one or more of its phases has been endemic in London. He holds that epidemic (lethargic) encephalitis is "the protean influenza, now not merely 'in mufti,' but changing from one civilian garb to another under our eyes, and demonstrating unmistakably that the more it changes the more it is the same thing."

Extending Compensation for Silicosis

With the object of amending the law with regard to workmen's compensation to give effect to the recommendations of the first report of the Departmental Committee on Compensation for Silicosis, a bill has been introduced in the house of lords. A memorandum issued with the text of the bill states that the committee found that the presence of silicosis in any degree renders the workman specially liable to tuberculous infection, and that in the great majority of mixed cases the silicosis precedes the tuberculosis and predisposes to it. The committee recommends that, subject to power being given to the medical officers to suspend from employment a workman found to be suffering from tuberculosis (without silicosis) or found at the first examination not to reach a prescribed standard of physique, patients with the combined disease should be compensated and otherwise dealt with in the same way as those with pure silicosis.

Exposure of Yadii

In previous letters, the methods used to exploit Yadii, a widely advertised nostrum, were discussed. To the evident consternation of the proprietors, the newspaper with the greatest circulation in England, the *Daily Mail*, has begun a campaign of exposure against it. This is a welcome innovation in the journalism of this country, for even the most respectable organs advertise nostrums, however exaggerated the claims made for them, and when the British Medical Association published "Secret Remedies," many of the leading papers refused to review it. It is curious that this departure should have been made by the *Daily Mail*, for, notwithstanding its huge circulation, its political tone is often low and it is regarded by its critics as eminently "yellow." The exposure begins with a long article by Sir William Pope, professor of chemistry in the University of Cambridge [This was dealt with in detail in the Propaganda department last week.—Ed.]

Sir Thomas Horder has written to the *Daily Mail* commending Sir William Pope's exposure, although he is not so sanguine as to believe that even so drumming a revelation will go very far toward curing the public of its credulity in regard to "patent medicines" in general. To him the chief significance of the incident lies in the fact that at last the public is beginning to undertake its own protection against quackery posing as medical science, a task heretofore left to the medical profession itself, incapable of any effective action for the reason that it was often accused in such a case of bias and self-interest. The success of a secret remedy is in proportion to the business acumen of its proprietors. In the case of Yadii, there has also been an effrontery which must be almost, if not quite, unparalleled in the annals of quack medicines. Putting the onus of the continuance of tuberculosis on the medical profession if it did not advise the use of Yadii was a masterpiece of impudence. It is not the incorrigibly credulous, whose credulity is often of the nature of a luxury, for whom justice demands protection, it is rather the anxious, the overwrought, the despairing, who have been falsely promised wonderful things. The poor save their last penny for a bottle of weak formaldehyd with a nauseous smell added. The busy physician must also be protected against erroneous statements and ingeniously worded documents issued in quasiscientific form, purporting to contain records of experimental cases treated scientifically, which are really only blatant advertisements.

PARIS

(From Our Regular Correspondent)

July 25, 1924

The Fifth International Neurologic Congress

For the last five years, the Societe de neurologie of Paris has organized every year an international neurologic congress devoted to the study of some live topic. The fifth congress dealt with "disseminated sclerosis," on which two papers were presented, by Prof. O. Veraguth of Zurich and Prof. Georges Guillain of Paris, respectively.

ETIOLOGY OF DISSEMINATED SCLEROSIS

Being a disease of adult life, disseminated, or multiple, sclerosis occurs usually in the 20-40 age group, although a few cases have been observed in which it developed after 40, while Guillain noted two cases in children aged 13. The geographic distribution of the disease is noteworthy, the disease occurs more frequently in Europe than in America. In Europe the incidence is greater in the northern countries, in the United States, in the Great Lakes region. In Japan it is of rare occurrence.

Although the infectious origin of the disease seems probable, there is as yet no common agreement on the question

Many authors believe that the pathogenic agent is a spirochete. It does not seem probable that there is any relation between disseminated sclerosis and syphilis. As for a possible connection between disseminated sclerosis and epidemic encephalitis, there are no well substantiated cases in which a causal relation could be shown to exist between the two diseases. The presence of somnolence in true disseminated sclerosis has, however, been established. As regards the spirochete that has sometimes been incriminated, Guillain recalls that Noguchi, after experimenting with eight samples of blood or cerebrospinal fluid from patients with disseminated sclerosis, stated that his results had been negative, whence he concluded that the suspected spirochetes are probably detached filaments from red corpuscles. Also the researches carried out by Marquay at the Salpêtrière clinic on nine cases of disseminated sclerosis were negative. In not one of his experiments could he discover spirochetes—not in his experimental animals, nor in the cerebrospinal fluid of patients, nor in the nerve centers of dissected animal subjects.

Prof. J. A. Barre of Strasbourg stated that he had studied critically seventy-two cases of disseminated sclerosis in an endeavor to discover the possible causes of the disease. He noted as immediate antecedent conditions: typhoid fever, three cases, influenza, eight cases, pneumonia, one case, childbirth, two cases, traumatism, one case, exalted emotions, five cases. As more remote antecedent manifestations, he observed anemia, one case, illuminating gas intoxication, one case, alcoholism, one case, traumatism, two cases, various chronic infections, six cases. In forty of the seventy-two cases, Barre found no pathologic antecedent.

Dr. Souques of Paris discussed the age of the subjects and the mode of onset in 100 patients with disseminated sclerosis. Three patients were under 20 years of age, fifty-four were between 20 and 30, and one patient was more than 50 years old. The onset was slow and insidious in seventy-three cases. In seventeen cases the attack was sudden. In ten cases the eyes were the first organs to be affected. The types that had an insidious onset began, in thirty-eight cases, with manifestations of fatigue or with paresthesias in the lower extremities, in thirteen cases, with paresthesias or with a feeling of discomfort in the arms. In two cases, the onset was attended by urinary phenomena, in two cases by hemiplegia. In several cases, there was a facial paralysis, a trigeminal neuralgia, and, in twelve cases, vertigo was present. The types with a sudden onset began with signs of vertigo or occasionally with an immobilized state in which the subject could not move. The types that began with ocular manifestations presented diplopia in seven cases and temporary amaurosis in three cases.

DIAGNOSIS OF DISSEMINATED SCLEROSIS

In his paper, Professor Veraguth emphasized the difficulties surrounding the diagnosis of disseminated sclerosis. In the cerebral type of the disease, the predominance of certain symptoms may open the way for misconceptions. The purely ocular types are sometimes difficult to recognize, and are often overlooked for some time. In other instances, an onset associated with epileptic attacks may lead one to suspect essential epilepsy, until one discovers later a permanent Babinski sign, together with abolition of the abdominal cutaneous reflexes. Also the hemiplegic type of disseminated sclerosis may be difficult to diagnose. Likewise, the sequels of epidemic encephalitis have a peculiar onset which makes differentiation easy. Cerebral tumors are more easily confounded with disseminated sclerosis. Such an error is always regrettable from a practical standpoint. Confusion of disseminated sclerosis with congenital or familial affections is not so likely. In the predominantly cerebellar types, the differentiation between disseminated sclerosis, on the one hand, and cerebellar or paracerebellar tumors, on the other

hand, may require careful judgment, especially if, associated with disseminated sclerosis, there is a facial paralysis. Hereditary cerebellar ataxia and Friedreich's disease are much easier to differentiate, especially if the family history is available. The spinal types may present diagnostic difficulties: (1) in the types with high localization (Oppenheim's cervical or sacral type), and (2) in cases the onset of which is marked by intense pain and which simulate tabes—especially, if ataxia and bladder trouble are present.

THE CEREBROSPINAL FLUID IN DISSEMINATED SCLEROSIS

Prof J. A. Barre and Dr L. Reys (of Strasbourg) reported the results of examination of the cerebrospinal fluid in seventy cases of disseminated sclerosis. The fluid was modified in 60 per cent of the cases. Hyperalbuminosis was present in 31 per cent, and hyperlymphocytosis in 42 per cent of the cases. The Wassermann test was positive in three of these patients in whom syphilis was a concomitant disease. Guillain's colloidal benzoin reaction was often positive when the Wassermann test was negative. This discrepancy between the two reactions appears to be frequent in disseminated sclerosis and may constitute a useful sign, but it has been noted also in certain cases of cerebral tumor.

International Cooperation in Intellectual Work

The Commission on Intellectual Cooperation, instituted by the League of Nations, plans to hold a session at Geneva, July 25-29, under the chairmanship of Prof. Henri Bergson. This session will be preceded by meetings of the three subcommittees appointed to deal, respectively, with questions of intellectual property, interuniversity relations and bibliography. The main topics on the program at these meetings are the exchange of publications, the work of the International Bureau of University Information, the study of intellectual life in the various countries, and the replies from the various governments to the draft of the Italian senator Ruffini pertaining to rights to scientific property, and the question of the coordination of bibliography in the realms of physics, physical chemistry and the social sciences.

An American Gift to the Sorbonne

Mr. Blumenthal of New York, as further evidence of his liberality toward French universities, has presented to the Sorbonne a gift of 250,000 francs.

Monument to the Memory of Prof. Raphael Blanchard

At Saint Christophe, his native city, a monument was recently unveiled in memory of Prof. Raphael Blanchard, who died in 1919. Addresses were delivered by Dr. Doleris, president of the Academy of Medicine, Prof. H. Roger, dean of the Faculty of Medicine of Paris, Professor Lapersonne, and others. The speakers referred to the progress that Blanchard had brought about in parasitology, the part that he had played in the establishment of the Institute of Colonial Medicine, in the Société de zoologie, which he helped to found and which he served for twenty-two years as general secretary, and in the Société d'histoire de la médecine, of which he was also one of the founders.

New Regulations with Respect to Milk and Its Derivatives

In order to give consumers of milk greater protection against the abuses, frauds and negligence of producers or vendors, a recent ordinance establishes various regulations with reference to the sale of milk and milk products. The term "milk" without further indication as to the species of animal from which it is derived may be used only of cow's milk. Milk from any animal other than the cow must bear a label indicating from what animal it is obtained, for example the milk of goats, asses or sheep. As unfit for human consumption are designated: (1) milk from animals affected

with any of the diseases named in the list prepared by the minister of agriculture on the basis of information furnished by the consultative committee on epizootics, (2) colored milk, unclean milk or malodorous milk, (3) milk secured under seven days after birth of young, and, as a general thing, milk containing colostrum, (4) milk from poorly nourished or manifestly overworked animals.

It will be considered as an attempt to defraud or as fraud to have in one's possession, to expose for sale or to sell, for human consumption, milk that is not reasonably clean for such usage, or mixed with milk that is not clean, milk obtained from incomplete milking, milk that has been skimmed or partially skimmed, unless, in the latter case, the containers bear a perfectly plain label "skimmed milk."

"Butter" shall be understood as being produced by the churning of the cream from cow's milk, milk or its associated components, and must be sufficiently freed from the butter milk by working and lavage as to contain no more than 18 per cent of nonfatty substances, of which no more than 16 per cent may be water. The coloring of butter with vegetable colors and the salting with commercially pure salt up to 10 per cent of its weight are permitted, provided such butter is marked "salted butter."

"Cheese" is the product obtained exclusively by coagulation and by pressing milk cream or skimmed milk. In the matter of cheese offered for sale, the following regulations shall be enforced: 1. Cheeses prepared from skimmed milk containing less than 15 per cent of fatty substance after complete desiccation must not be sold unless they bear a stamp to the effect that they are '*maigre*', that is below standard as to fat content. 2. Cheeses prepared from other than cow's milk must bear a label indicating from what kind of animal the milk was derived.

Death of Dr. P. Lugeol

Dr. P. Lugeol, formerly obstetrician to the hospitals of Bordeaux, has died at the age of 85. Lugeol was born at Havana, Dec. 28, 1838, and in 1863 became an intern in the hospitals of Bordeaux. He became, later, obstetrician to the hospitals of Bordeaux, and while he was the director of the maternity department through the introduction of Pasteur's methods the statistics of this branch of the service became much improved. Lugeol took an active part in the creation of the medical syndicates, and, about ten years ago, he was elected president of the Association générale des médecins of the department of Gironde, the affairs of which he directed up to the time of his death.

Personal

The Academy of Medicine recently elected, on the first ballot, Dr. J. Camus, agrégé professor and head of the practical work in physiology at the Faculty of Medicine in Paris, as a corporate member of the section in biologic sciences.

PRAGUE

(From Our Regular Correspondent)

July 31, 1924

Medical Education

The reform of medical education has again come to the front. The final plan is to be formulated by a committee in which all the medical faculties will be represented. It is probable that there will be no radical changes in the curriculum proposed by the committee. There seems to be a unanimous agreement that the study of medicine cannot be prolonged and that all improvements in the curriculum must be made in the intensification of the studies. The practical education of physicians cannot be improved by changes in the plan of study, and it is well realized that this phase of the problem depends largely on the equipment of the medical schools. According to the present scheme, the medical studies

were divided into four semesters of study of normal conditions, while the six ensuing semesters were supposed to be devoted to the study of the sick. In actual practice, five semesters were spent on studies of normal conditions and only four on pathologic studies, owing to the distribution of the examinations. It is proposed to concentrate the studies of normal conditions into the first four semesters and to use the fifth semester for the teaching of clinical propaedeutics, the chairs for which have been established in all the medical faculties of the republic. This semester should be devoted to the teaching of clinical methods of examination, and the transition from the theoretical into clinical teaching made easier for the student. Another change is proposed in the form of examinations, which up to now were held in three groups of six examinations each. The examinations dealt with individual branches of medicine, and there was no effort to ascertain how far the teachings of the different branches of medicine have been correlated by the student. Therefore it is proposed to hold some sort of general examination at the conclusion of each of the three groups of the examinations. This examination should be attached to physiology in the first group, to pathologic physiology in the second, and to hygiene in the third. In this way it is intended to obviate the tendency of the students to study one subject for the examination, and forget everything about it as soon as the examination has been passed.

Council for Military Hygiene

An advisory council for military hygiene was recently established by a decree of the minister of national defense in the Czechoslovak Republic. The council consists of the chief of the army medical service as president, four ex-officio members, and eight ordinary members representing army medical officers, pharmacists, the ministry of health, the medical faculty of Prague, and other civilian organizations. The council is supposed to become an advisory body for the ministry of national defense for the scientific problems connected with military hygiene. It will be the task of the council to pass judgment on the new projects of the army medical service, follow the development of military hygiene in its scientific aspects at home and abroad, direct the professional library, suggest the ways and means for the further education of army medical officers, formulate the principles of army vital statistics, and establish a collection of standardized sanitary material and a hygienic museum. Two meetings of the council are to be held each month.

Ukrainians in Prague

The establishment of the Ukrainian university in Prague last year by emigrants and refugees from soviet Russia has been followed by a rapid development of professional activities on the part of Ukrainian medical men, who have concentrated in Prague around their teaching center. This meant not only a gain for the existing local medical schools because the presence of the Ukrainian professors and investigators led to an interchange of ideas, but also the organization of new bodies for the solution of medical problems. Recently the first meeting of the Ukrainian Biologic Society was held in Prague in the building of the Czech Medical School, where also the Ukrainian Medical School is housed under the leadership of the chemist, Prof. J. Horbaczewsky. A Ukrainian branch of the Masaryk League for the Combating of Tuberculosis was also recently organized for the purpose of stamping out the disease in Ukrainian emigrants who have taken shelter in the Czechoslovak Republic after their many hardships and sufferings.

Child Welfare

The Institute for Pedology in Prague, which has become an important center for research in the development of the

child, will probably be affiliated in the near future with the anthropological institute of the Prague University. In the department for pedagogy of the institute, a mental test called the picture test has been developed by Dr. Herfort, who is the founder of the institute. In the somatologic department, children from a number of schools were studied in order to establish standards for the development of the body of the normal child. In the pedopsychologic department, records were devised for the tracing of the development of the intelligence of the child from the kindergarten to adolescence. The most popular part of the institute is its clinics for subnormal children, utilized not only by teachers but also by parents. The work of the institute has grown so extensive that it is seeking affiliation with the university, hoping that more funds may become available for the development of the work.

VIENNA

(From Our Regular Correspondent)

July 23 1924

The First Congress on Logopedia and Phoniatry (Diseases of Speech and Voice)

A few days ago, the first congress of students of the defects of speech, including laryngologists, neurologists, linguists and teachers, took place in Vienna and lasted three days. It was rather a daring enterprise for the organizers were not sure of success. The majority of those present came from Austria and Germany, but there were students also from Italy, England, Greece and the Balkan countries. Docent Dr. Froschels, who presided, pointed out that the treatment of the defects and disturbances of speech is closely connected with problems of medicine, psychology and education. He defined aphasia as "partial or complete loss of the faculty of speech (respectively of the understanding of speech) while the organs of speaking and the intellect are intact." He was satisfied that the old division of aphasia into sensory and motor aphasia was still the best, and he emphasized the value of dividing apperception into three types for the purpose of psychologic pedagogics: the visual, the acoustic and motor types. At present, students are not unanimous in localizing exactly in the brain the various manifestations of this condition. Dr. Hugo Stern spoke in memory of Gutzman, "father of phoniatry," whose endeavors to establish the entity of this branch of medicine were finally crowned with success.

Docent Allers and Dr. Freund reported on their investigations on the psychologic process of formation of words, which consists of a complicated series of psychic reflexes. Professor Winkler read a paper on hypnosis in relation to aphasia, he could produce at will aphasic symptoms in suitable mediums. The second main report was that by Professor Eliasberg of Munich, dealing with the "testing of the intellect with chief regard to the speech." Intellect is defined as the ability to adapt thinking to newly arising demands produced by new circumstances. By testing the faculty of speech of an individual and its adaptability to new requirements, one is able to discern by psychotechnic methods the qualities of applicants for certain posts. Dr. Stein presented a paper on universal stammering, or, as he terms it, "dysarthria universalis articulatoria." He maintains that the disturbances of speech, notable in persons affected in that way, are based on the same grammatical rules as control the formation of dialect or development of a given language.

On the second day, Professor Scripture of London showed his phonetic apparatus, by means of which he can ascertain and control the pitch of the voice of deaf-mutes, and thus use it for the teaching of such persons to talk. Incidentally, his apparatus can also aid the diagnosis of epileptic conditions. The chief report of that day was presented by Dr. Hoepfner of Saalfeld on stammering. He emphasized that under this

comprehensive denomination is understood a series of conditions that differ widely from one another in the view of pathologic anatomy and psychic conditions. He maintains that the majority of these cases belong to what he terms "associative aphasia", i. e., a disturbance of the equilibrium of the child's psyche by the idea that it is unable to speak, which produces in its turn a defect of speech. In his report, Scripture pointed out that the psychologic factor is of paramount importance in such cases, the personality of the therapist, not his method, is decisive. The discussion that ensued lasted several hours. Drs. Froschels, Stein and Gumpertz pointed out their experiences with patients of this type. They all agree that the psychic factor is of utmost importance, but they do not all coincide with the conclusions drawn by Dr. Hoepfner. Dr. Hugo Stern is of the opinion that in many stammerers a sudden "inability to make their voice audible" takes place. This is thus a "temporary associative aphasia," which is not very difficult to attack by therapeutic measures.

A number of papers by Rothe, Hoffman and Watzl dealt with the provisions for stammerers in schools. The institution of special classes for these handicapped children, thus separated from their fully capable copupils, proved an excellent method of dealing with this troublesome condition. In Vienna, there are three schools in which specially trained teachers are dealing with such pupils. It was suggested that among the school physicians appointed by the municipalities, at least one or two should be a fully qualified logopedist. Heretofore this has nowhere been the case.

On the third day, the chief report was by Dr. Hugo Stern on diseases of the voice and their treatment. He produced a tabular summary of all known diseases of the voice, with adequate explanations of the pathology and therapy. The subject of phonesthesia (functional fatigue and weakness of the voice) caused much discussion. He advocated intensive cooperation of physicians and teachers in the treatment of singers' voices. Dr. Bromme explained the famous methods of Engel in developing the voice of speakers and singers. Dr. Demetriades of Athens reported on his experimental researches on the part played by the circulation in the variation of the resonance of the skull. The value of phonetic methods in the investigation of linguistic, historic researches was elucidated by Mrs. E. Richter, while an important paper was presented by Dr. Trojan and Dr. Froschels on the psychologic and experimental phonetic control in the training of pupils, especially of deaf-mutes and of singers with voice defects. Here the three types of visual, acoustic or motor perception are of utmost importance in influencing the rate of progress of the pupil.

A final demonstration at the clinic of Professor Hajek (for laryngology) was given to the members of the congress. They were invited to visit the phoniatric department, where the director, Docent Dr. Hugo Stern, showed his apparatus for teaching deaf-mutes, stammerers and patients with speech defects after operations on the larynx. A laryngostroboscope gives excellent opportunity to study these conditions and control the progress made by pupils, at the same time aiding them to attain the desired ability in producing voice or words. A number of patients with a newly formed voice after total laryngectomy (using the stomach as a wind reservoir) were shown in whom Stern had thus succeeded in restoring their ability to communicate with their surroundings in a voice that is a little harsh but is otherwise excellent. After a most successful meeting, and a few social entertainments customary at such occasions it was resolved to arrange another meeting of the newly founded society in two years and Professor Scripture of London was elected president. With the aid of the vice presidents, Drs. Stern and Froschels, he will arrange the meeting, to be held in a German city. As the main subject

for the coming proceedings, a report on the training of phonetic pupils was selected, and Froschels and Trojan are to report on it.

Universal Health Control of the Population

In a report to the board of health, Dr. Reiss makes a valuable suggestion, which has already been adopted by some life insurance companies. He advises a regular health examination of that part of the population which is more than 40 years of age, comprising a thorough overhauling of the individual, an examination of his excretions and secretions, roentgenograms, blood cultures, and control of the circulatory system. Exact records are to be kept of each person examined and any differences appearing should be at once called to his attention. The regular examination is intended chiefly for healthy persons, not for patients already under treatment. By this means, not only would a large number of case histories be collected after a reasonably long time, showing the actual state of health of a large part of the population, but diseases would be discovered at an early stage, with much better prospects of cure or eradication. English life insurance companies offer such regular periodic examinations—which, of course, remain strictly confidential—to their insured members free from charge, because the risks of the company are thus manifestly decreased. The health census would mean an excellent aid in the management of pathologic conditions of mature life and be a certain means of saving a lot of trouble and pains to the individual, at the same time saving a vast amount of public money by combating disease at its primary stage.

BERLIN

(From Our Regular Correspondent)

July 19, 1924

The Physicians and the Health Insurance Societies

At the recent session of the German medical association in Bremen, the following resolutions and recommendations for the reform of the social insurance system were unanimously adopted.

1 The medical profession is now, as it has been in the past, ever ready to cooperate to the fullest extent in carrying out social insurance legislation. It wishes, however, to emphasize that such cooperation will be of little avail unless the physicians are accorded by such legislation a position and influence that are in keeping with the importance of their work and the execution of their tasks. With this idea in view, independent representative physicians should have a seat and voice in the administrative bodies controlling the affairs of the insured.

2 Since this demand can be met under every form of constitution and with any number of insured members, the questions concerning the federation of the members of health insurance societies or their complete independence of one another have, from the medical standpoint, only subordinate interest. The only essential thing is that the capacity and performance of all insured members shall be fully protected by insurance.

3 In view of the decreased financial capacity of the German people, compulsory insurance of all kinds should be confined to such strata of the population as are sorely in need of insurance protection but are able, through the fruits of their labor, to pay the necessary dues or premiums. Therefore, in connection with health insurance, the following provisions should be established or adhered to: (a) Compulsory insurance should be applicable to all persons with an annual income from their labor of less than 2,400 marks. (b) The total amount realized from the labor of the insured must form the basis for the estimation of the fees to be paid. (c) No persons should be privileged voluntarily to accept insur-

ance in the health insurance societies if their total income is in excess of the limit established for compulsory insurance (d) No form whatever of insurance should be allowed persons with a total annual income of 4,000 marks (e) Questions as to the extension of the insurance privilege to persons of very limited means (small property holders, for example) should not be referable to the federal health insurance administration but should be settled by special measures enacted by the empire, the provinces and the communes

4 In consideration of the need of furthering and strengthening the health of the people, not only should the performances in kind as at present required be maintained, but in the whole field of government-controlled insurance the cash benefits should be reduced as far as possible and replaced by performances in kind Annuities of all kinds should be replaced by a wider range of medical treatment, in order that the capacity of the insured may be restored to the highest attainable degree

5 In the field of health insurance, the benefits and privileges commonly accorded the insured and to which they may legally lay claim are usually adjusted on a very reasonable, common-sense basis Provided the demands expressed in the third recommendation are complied with, the treatment of members of the family of the insured may be approved and accepted as a benefit to which the insured are regularly entitled

6 The establishment of the federal health insurance board (*Reichsausschuss*) to adjudicate differences that arise between the physicians and the health insurance societies may be regarded as an attempt to restore ordered relations between the contending parties The board cannot, however, fulfil its purpose unless the health insurance societies whose members are miners, together with the physicians serving them, are placed under the control of the board

7 The provisions of the decrees of Oct 30, 1923, and of Feb 13, 1924, respectively, which limit the freedom of physicians in the practice of their profession, and likewise the regulations of the federal health insurance board issued at about the same time, were emergency measures which have outlived their usefulness and should, therefore, be abolished at once and as effectively as possible In place of these decrees, measures should be agreed on looking toward a practicable distribution of physicians throughout the empire

8 The legal recognition of the right of free choice of physician operates to the best advantage of the insured, the physicians, the employers and the whole German people

9 In order that all physicians may be in the possession of the needed information pertaining to social insurance legislation and service, obligatory lectures on the subject should be organized in all the medical schools of the country

Regulations Pertaining to the Duties of Nurses

The federal health insurance board (*Reichsausschuss*) has established the following rules and regulations as governing the activities of nurses serving health insurance societies in the rural districts

1 Only nurses holding state diplomas will be recognized

2 The duties of nurses employed by the health insurance societies as care-taking personnel or as assistants to physicians shall be confined, in the treatment of patients, to the actual care of the sick or to the performance of such work as is necessitated by the ministrations carried out or prescribed by physicians

3 If a nurse is called by a patient or by some member of the family, she should call the patient's attention to the desirability of summoning a physician In urgent cases it is her duty to call a physician herself, or at least see to it that one is called

4 Nurses are forbidden (a) to give independent advice as to how the patient should be treated, (b) to render inde-

pendent aid, except first aid in emergencies, and then only until the arrival of the physician, and (c) to endeavor to influence patients in favor of or in opposition to certain physicians

5 If a physician thinks a nurse should be called to care for a patient, he must see to it that the health insurance society is so informed

6 Nurses must, in the treatment of patients, faithfully follow the directions of the physician

7 Complaints of physicians on account of infractions of Rules 1 to 4 on the part of nurses and complaints of nurses against physicians will be heard and acted on by the council of physicians associated with each health insurance society As far as possible, representatives of the nurses organizations more particularly concerned should be present at the deliberations of the council and should be allowed to present their side of the case

Marriages

JOHN KENNETH VON LACKUM Cedar Rapids, Iowa to Miss Adellia Boies of Des Moines, Iowa, at Waterloo, April 21

DONNAN BEUTER HARDING, Iowa City, Iowa, to Miss Margery Herberling of Tiffin, Iowa, June 24

FAYETTE CLAY EWING Alexandria, La., to Miss Rowena Annette Clark, Princeton, Ill August 2

W CARLETON WARRICK, Detroit, to Miss Ann Martin, Orleans, Mass at Detroit, July 10

CLEMENT A JARKA, Mount Carmel Pa., to Miss Helen V Pietrowski, Astoria, N Y July 8

JOSEPH G WALKER, Lyons, Kan., to Miss Edna Ruby Barnes, Hazelton, Kan., August 4

JESSE J HOLES, Battle Creek, Mich., to Miss Jessie M Gibbons, Watseka, Ill., June 9

ALPHONSE R DES JARDINES Lincoln, Neb., to Miss Bertha S Baer, Eustice, Neb., July 12

ALTRUS B HARVEY, Tylertown, Miss., to Miss Myrna Clark, Mount Olive, Miss., August 4

A FILLMORE COMPTON to Miss Evangeline Henderson, both of Moundsville, Va., recently

ROSEWELL C BASSINGER, Mobile, Ala., to Miss Helen Bolinger, Bolinger Ala., July 17

JOHN HIGGINS CURTIN to Miss Loretta Marie Saunders both of Flint, Mich., July 28

RODNEY P FAGAN to Miss Mary Elizabeth Allen, both of Des Moines, Iowa, May 20

ROBERT E CUMMINGS, Delavan, Wis to Miss Gladys Meehan, Chicago, July 2

HALBERT R HILL, Aunvasse, Mo., to Miss Verta L Driscoll of Mexico, Mo., June 17

A MARTIN SWANSON, Rockford, Ill., to Miss Alice Bowman, Guilford, Ill., June 25

EDGAR R EARWOOD to Miss Helen Hart, both of Fort Dodge, Iowa, recently

OSMON C CHURCH, Quincy, Ill., to Mrs Mary Easterly, Ullin, Ill., July, 1924

ERLING W HANSON to Miss Anne Ruth Eddy, both of Minneapolis, June 4

FRANK J CHMELIK, Joliet, Ill., to Miss Georgiana Vonasek of Chicago, July 7

JAMES W JONES to Miss Frederica Loomis both of San Francisco, recently

CARL T ROSE, New York, to Miss Lilhan Goldenberg Los Angeles, July 30

GEORGE L CLARKE, Lincoln, Neb., to MILDRED L JOHNSON, Omaha, June 5

LLOYD LACEY to Miss Dorothy Care, both of Des Moines, Iowa, April 19

MORITZ GROSS to Miss Florence Maunel, both of New York, August 2

ANNE AGASSIZ to Gordon Chickering Prince, both of Boston May 31

Deaths

Bertram Welton Sippy ☉ well known for his work on diseases of the stomach and gastro-intestinal tract and as a clinical teacher of marked ability, died suddenly of heart disease, complicating diabetes, at his summer home near Ludington, Mich., August 15. Dr. Sippy was born in Neptune, Wis., Oct. 30, 1866. He attended the University of Wisconsin, 1884-1887, and then went to Rush Medical College, where he received his medical degree in 1890. He served for two years as an intern in the Cook County Hospital, and then was for three years assistant chief surgeon of the Northern Pacific Railroad. In 1895, he went to Vienna for one year of post-graduate study, and on his return became instructor, and later assistant professor of medicine in Rush Medical College. Since 1906, he has been professor of medicine in Rush Medical College and the University of Chicago. He was a member of the Association of American Physicians and the American Gastro-Enterological Association, and attending physician at the Presbyterian Hospital and other Chicago institutions. Dr. Sippy was especially well known for his system of treatment of gastric and duodenal ulcers, a method elaborated on the basis of physiologic and chemical studies. He contributed special articles on this condition to periodical literature and to such works as the Oxford and Nelson Systems of Medicine. He was an indefatigable worker, attending a large clientele and giving instruction to numerous students, assistants and practitioners. During recent years he had devoted much attention also to the care of his country estate near Ludington.

George Arthur Piersol ☉ Philadelphia, professor emeritus of anatomy University of Pennsylvania School of Medicine, Philadelphia, died at his home, August 7, aged 68, following a long illness. Dr. Piersol graduated from the Department of Medicine, University of Pennsylvania, Philadelphia, 1877, and until 1882 was assistant demonstrator of histology in his alma mater. He became demonstrator of embryology later and in 1891 professor of anatomy, which position he held until retired in 1921 on account of poor health. He was president, 1910-1911, of the Association of American Anatomists and for fourteen years a member of the board of editors of the *American Journal of Anatomy*. He was a member of the Philadelphia Pathological Society, the Academy of Natural Sciences and a fellow of the College of Physicians of Philadelphia, the author of "Normal Histology," "Human Anatomy" and a translation of Verligger's "Brain and Spinal Cord," on a revision of which he was working at the time of his last illness.

Samuel Johnson Walker ☉ Chicago, died in Lake Forest, August 19, aged 57 years, of cerebral hemorrhage. He was graduated from Yale in 1888, and studied medicine in Northwestern University Medical School, from which he received his degree in 1894, then followed two years of postgraduate study in Europe. He was adjunct professor of diseases of children in the College of Physicians and Surgeons, Chicago, from 1900 to 1903, and president of the Chicago Pediatric Society, 1904-1905. He served also as attending physician to the Passavant Memorial Hospital, St. Vincent's Infant Asylum and the Children's Memorial Hospital. During the World War he was sent by the Red Cross for ten months' service in the mountainous region of Macedonia and Greece, giving special attention to the care of typhus. For this work, he received a special decoration from the king of Greece.

Benjamin Farquhar Curtis, Hastings-upon-Hudson, N. Y., Medical Department of Columbia College, New York, 1881, member of the Medical Society of the State of New York, professor of principles of surgery and clinical surgery, University and Bellevue Medical College, New York, on the staffs of the St. Luke's Hospital and Bellevue Hospital, consulting surgeon to the General Memorial Hospital, New York Orthopedic Hospital and Dispensary, and the Manhattan Eye, Ear and Throat Hospital, a member of the American Surgical Association and the New York Academy of Medicine, died, August 5, aged 67.

Richard Fitz Harris Gundry ☉ Catonsville, Md., College of Physicians and Surgeons, Baltimore, 1888, formerly assistant physician at the state hospitals at Dayton and Athens, Ohio, established the Richard Gundry Home, Catonsville, 1891, formerly president of the Baltimore County Medical Association, member of the board of directors of the Spring Grove Hospital, member of the American Psychiatric Association, died at his home, August 5, aged 58, following an operation in June for nephrectomy.

Ernest Marsters Vaughan, Brooklyn, Cornell University Medical College, New York, 1906, member of the Medical Society of the State of New York, associate professor of pathology, Long Island College Hospital, Brooklyn, formerly conducted a sanatorium in Brooklyn, assistant to the district attorney for Kings County, served in France during the World War, died, August 4, aged 45, at the Brooklyn Hospital following an operation for ulcer of the stomach.

Henry Moeller ☉ New York, Medical Department of Columbia University, New York, 1871, member of the Academy of Medicine, the New York Pathological Society and the Medical Society of Greater New York, formerly on the staff of the Hospital for Ruptured and Crippled Children, a practitioner in New York City for more than fifty years, died, August 5, at his home, aged 81.

Herbert Fiske Bishop, Alhambra, Calif., Hahnemann Medical College and Hospital of Philadelphia, 1900, on the staff of the Alhambra Hospital, member of the executive board of the Alhambra branch of the Pacific-Southwest Bank, aged 52, was drowned, July 22, off Santa Cruz Island, when the boat in which he was sailing capsized.

William Hodgson Glynn, Pittsburgh, Western Pennsylvania Medical College, Pittsburgh, 1902, a member of the Medical Society of the State of Pennsylvania, on the staffs of the St. Rosalia Foundling Asylum and of St. Joseph's Hospital, served in France during the World War, died, July 31, aged 46.

John Smith Hartford ☉ Oklahoma City, Kansas City Medical College, Kansas City, Mo., 1901, associate professor of gynecology, University of Oklahoma School of Medicine, on the staff of the St. Anthony's Hospital, where he died, July 28, aged 50, of cerebral hemorrhage.

Frederick Harris Bailey, Fargo, N. D., University of Buffalo (N. Y.) Department of Medicine, 1893, member of the North Dakota State Medical Association, specialized in ophthalmology, otology, laryngology and rhinology, aged 57, died, July 28.

Thomas Irwin Padgett, Terre Haute, Ind., Hospital College of Medicine, Medical Department of Central University of Kentucky, Louisville, 1889, formerly coroner of Greene County, served in the World War, died, August 5, aged 60.

Charles Henry Blake, Newark, Del., Baltimore University School of Medicine, Baltimore, 1902, member of the Delaware State Medical Society, president of the board of health of Newark, died, July 29, aged 48, of cerebral hemorrhage.

John Hester Ward ☉ Tusculoosa, Ala., University of the South, Medical Department (Sewanee Medical College), Sewanee, Tenn., 1899, aged 47, was found dead, August 4, in his office of a bullet wound presumably self-inflicted.

Andrew R. Robertdeau Holderby, Collegepark, Ga., Atlanta Medical College, Atlanta, Ga., 1858, also a minister, Civil War veteran, one of the founders of the Presbyterian Hospital, Atlanta, died, August 3, aged 85.

Albert F. Sheibley, Ottawa, Ohio, Starling Medical College, Columbus, Ohio, 1895, member of the Ohio State Medical Association, for many years county coroner, died, August 3, aged 59, following a long illness.

Ralph Ross Jordan, Du Bois, Pa., Department of Medicine, University of Pennsylvania, Philadelphia, 1903, member of the Medical Society of the State of Pennsylvania, died, July 31, aged 51, of nephritis.

Henry M. Argabright, Clare, Va., College of Physicians and Surgeons, Baltimore, 1879, died, June 17, aged 68, at the Kings Daughters Hospital, Staunton, Va., of diabetes mellitus and myocarditis.

Frederick Stocker Raddin, Chelsea, Mass., Medical School of Harvard University, Boston, 1891, formerly on the staff of the Frost Hospital, now the Chelsea Memorial Hospital, died, July 28, aged 58.

Thomas Garland Turk, Reynolds, Ga., Atlanta School of Medicine, Atlanta, Ga., 1908, member of the Medical Association of Georgia, died, July 25, at his home, of heart disease, aged 50.

Sherman T. Dodge, Corpus Christi, Texas, American Medical College, St. Louis, 1905, member of the State Medical Association of Texas, died, July 23, aged 59, of cerebral hemorrhage.

George D. Carnes ☉ South Haven, Mich., Detroit Medical College, Detroit, 1876, formerly president of Kalamazoo Academy of Medicine, died, August 1, aged 73, following a long illness.

Philip Cooper & Syracuse, N Y, Syracuse University College of Medicine, Syracuse N Y, 1912, died, August 5, aged 35, at the Hospital of the Good Shepherd following an operation

Frank Spencer Halsey, New York, New York University Medical College, 1885, member of Medical Society of the State of New York, died suddenly, August 2, aged 63, of heart disease

Jacob Gyore Green, Malden, Mass, University of Budapest Hungary, 1884, vice president of the Malden Anti-Tuberculosis Society, died August 7, aged 63, following a long illness

Alonzo B Capel & Shawneetown, Ill, Marion-Sims-Berumont Medical College, St Louis, 1902, died, August 4, aged 55, as the result of injuries received in an automobile accident

Charles E Harnsberger, Alhambra, Ill, Missouri Medical College, St Louis, 1880, aged 60, was killed, August 4, when the automobile in which he was driving was struck by a train

Thomas Benton Hill, Waynesburg Pa, Jefferson Medical College of Philadelphia, 1875, member of the Medical Society of the State of Pennsylvania, died, July 25, aged 80

Jacob Milton Hopkins, Alexandria, Va, Howard University School of Medicine, Washington, D C 1894, died suddenly, aged 51, while attending a patient, July 26

George T Finch, Thompsonville, Conn, Bellevue Hospital Medical College, New York 1877, member of the Connecticut State Medical Society, died, July 29, aged 70

C E Shackelford, Dallas, Texas, Memphis Hospital Medical College Memphis, Tenn, 1905, died, July 29, aged 45, from the effects of poison taken accidentally

Joseph E Piché, Rexton, Mich, Montreal School of Medicine and Surgery, Montreal, Canada 1889, was found dead in bed of heart disease, July 26 aged 62

Edward Palmer LeCompte, Park City, Utah, Missouri Medical College, St Louis, 1875, aged 75 was found dead in his office of cerebral hemorrhage, July 26

Frank C Genung, Wausa, Neb, College of Physicians and Surgeons Chicago 1891 served in the World War, died, July 27, aged 58 of heart disease

William M Hardin, Evansville Ind, Medical Department University of Louisville Louisville, Ky, 1893, died, July 31, aged 59, following a long illness

William T Porch, Waverly, Tenn, University of Nashville Medical Department Nashville, Tenn, 1869, Confederate veteran, died, July 28, aged 89

Oscar F Searl, Solomon Kan, Berkshire Medical College, Pittsfield, Mass, 1865, Civil War veteran, died, July 19, aged 82, of cerebral thrombosis

Joseph Klapp, Philadelphia, Jefferson Medical College of Philadelphia 1889, died at his summer home in Ocean City, N J, July 31, aged 74

Richard J Bickerdike, Chicago, National Medical College, Chicago, 1898, died in Los Angeles, August 10, aged 64, following a long illness

Robert Lee Jones, Rayville, La, Louisville Medical College, Louisville, Ky, 1897, aged 55, died at his home, July 16, of cerebral hemorrhage

John H Urquhart, Ironwood, Mich, Rush Medical College, Chicago, 1895, died at Miami, Fla, July 23, aged 61, following a long illness

Edward H Wilsey, Chesapeake City, Md, Hering Medical College Chicago, 1894, died, July 30, aged 59, following a long illness

Absalom H Wingo, Norcross, Ga, Georgia College of Eclectic Medicine and Surgery, Atlanta, Ga, 1886, died, July 30, aged 68

Wilson L Peters, Circleville, Ohio, New York Homeopathic Medical College and Hospital, 1897, died, July 28, aged 73

Robert A. Anderson, Gulfport, Miss, Memphis (Tenn) Hospital Medical College, 1898, died, August 1, aged 51

Edward William Perry, Providence, R I, Dartmouth Medical School, Hanover, N H, 1877, died, August 6

Edward S Coyle, Schenectady, N Y, Albany Medical College, Albany, N Y, 1882, died, August 7, aged 68

David M Castle, Philadelphia, Hahnemann Medical College of Philadelphia, 1873, died, August 6, aged 81

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNALS BUREAU OF INVESTIGATION OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

MORE MISBRANDED NOSTRUMS

Abstracts of Recent Notices of Judgment Issued by the Bureau of Chemistry of the United States Department of Agriculture

Doan's Kidney Pills—The Foster-Milburn Co, Buffalo, N Y, manufacturers of "Doan's Kidney Pills" shipped in October and November, 1923, a quantity of this nostrum that was misbranded. Analysis of a sample of the article by the Bureau of Chemistry showed that the pills consisted essentially of potassium nitrate, ground leaves of uva ursi (bearberry), a trace of volatile oil such as turpentine or juniper oil, a resin starch, sugar and talc. Some of the claims made on the trade package for these pills were

"Kidney Pills acting directly on the Urinary System

"There are certain trades in which those following such trades are subject to kidney troubles. In such cases if these pills are indicated increase the dose. When relief is noticed the dose may be reduced.

If you perform indoor work or any kind of work which strains the kidneys increase the dose.



Typical 'scare stuff' advertising of Doan's Kidney Pills. Frightening the public into the belief that lumbar soreness means kidney disease.

The government officials declared that the curative claims made for Doan's Kidney Pills were false and fraudulent and on January 30, 1924, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed—[Notice of Judgment No 12113, issued July, 1924]

The advertising of "Doan's Kidney Pills" has long been an offense against the public health. For years the advertising methods of this concern have been such as to frighten the public into the belief that pain or soreness in the lumbar region is indicative of kidney disease. The manufacturers of Doan's Kidney Pills or some of their officers for years seem to have been members of the Proprietary Association, the 'patent medicine' organization, which professes to accept for membership only those who will market their products in such a way as not to violate the law. As the association has for years kept its general membership secret, it is impossible to tell how many of the 'patent medicine' fakers who have been found guilty of fraudulent practices belong to that organization. The favorite method by which the manufacturers of Doan's Kidney Pills advertise is that of publishing testimonials in country newspapers, the testimonials in question having been given by those living in the locality in which the paper is published. THE JOURNAL has at various times shown that these advertisements are occasionally boomerangs. There was the case, for instance, of Mr Ford of Kankakee whose testimonial appeared in a Kankakee paper three months after the poor man was dead and buried. There was the testimonial of Mrs Butcher of Guthrie, Okla, whose testimonial for this 'kidney cure' appeared in the home paper two months after she had died of nephritis. Nettie Woodrow's testimonial appeared in the same issue of a Glenwood (Iowa) paper that carried Mrs Woodrow's death notice, while the death notice of Mr Moon of Nashua, Iowa,

appeared in the same issue of the *Nashua Reporter* that carried that gentleman's testimonial. The "Doan's Kidney Pills" concern apparently makes an effort to prevent such unfortunate occurrences as those just cited. They claim to instruct the papers that carry their advertising to check up on the local testimonial givers and, if the individuals are found to be dead, to return the advertising copy for revision! There is no moral or economic excuse for the sale of home remedies that are recommended for the treatment of so serious a condition as kidney disease. Every "patent medicine" sold for this purpose is potentially dangerous and inherently vicious.

Lafayette Headache Powders—The Lafayette Co., Berlin, N. H., shipped between October, 1922, and September, 1923, a quantity of Lafayette Headache Powders that were misbranded. The Bureau of Chemistry analyzed this nostrum and reported that the headache powders consisted essentially of acetanilid, caffeine, sodium bicarbonate and aromatics, including cinnamon and ginger. The trade package bore such claims as:

'Relieves Nervous and Biliary Headaches Neuralgia Sleeplessness, Cold with Fever La Grippe Mental Exhaustion and Sour Stomach

Allay all pains in the Head all kinds of Neuralgia Heaviness of the Head Nuchalache Apathy resulting from intellectual Overwork from Loss of Sleep or from a Bad Digestion effectively alleviate Grippe accompanied or not with Fever

These claims were declared false and fraudulent and in February, 1924, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 12104, issued July, 1924*]

Grogan Mineral Water—Arthur W. Canfil who did business at Sweetwater, Texas, under the trade name Grogan Wells & Boone Institute of Massage shipped in October, 1919, a quantity of "Grogan Mineral Water" that was adulterated and misbranded. Adulteration was charged because examination by the Bureau of Chemistry of specimens of Grogan Mineral Water showed the presence of large numbers of bacteria and gas forming organisms indicating that the water was polluted with filthy animal and vegetable substances. The product was declared misbranded because it was falsely and fraudulently represented to be an effective "cure for rheumatism, gastro-intestinal and all liver and kidney trouble, when, in truth and in fact, it was not." In October, 1923 Arthur W. Canfil pleaded guilty and was fined \$50.—[*Notice of Judgment No. 12189, issued July, 1924*]

Correspondence

TREATMENT OF DIPHThERIA CARRIERS WITH GENTIAN VIOLET

To the Editor—I have read with interest Dr. Saurman's article on this subject (*THE JOURNAL*, July 26). The following case illustrates the possibility of erroneous conclusions being drawn from negative cultures following the use of this dye.

The possibility of gentian violet proving efficacious in the treatment of diphtheria carriers occurred to me following the appearance of Churchman's paper on "Selective Bacteriostasis in the Treatment of Infections with Gentian Violet" (*THE JOURNAL*, Jan. 17, 1920), and a suitable case for experiment was found in a young woman who had passed through an attack of diphtheria late in November, 1919, and had given positive cultures up to Jan. 31, 1920. A cotton swab saturated with a saturated aqueous solution of gentian violet was pressed against the back of the pharynx, the dye spreading to the tonsils and pharyngeal wall. The attending physician, contrary to instructions, used the solution first, February 2, and after a twenty minute interval used it again. After waiting half an hour, he took a culture which, as might be expected, was found negative. The patient herself used the solution night

and morning, February 3 and 4, and on February 6 the attending physician repeated his procedure of February 2. The culture again proved negative. The patient used the dye herself at intervals and on February 21—three days after she had discontinued all treatment—I took a culture myself, which proved negative, and the patient was instructed to use no further treatment. A culture taken on February 28 was negative, but a fifth culture, taken March 3, proved to be positive.

The attention of the district state health officers of the New York State Department of Health had been called to the possibility of this form of treatment, and it was tried in a number of instances, without striking success, when cultures were taken a week or more after discontinuing treatment.

Apparently, while it is possible to obtain negative cultures for several days following the use of the dye, it cannot be relied on to eliminate diphtheria organisms from diseased tonsils. It seems probable that the dye merely destroys the diphtheria bacilli to the depth to which the dye penetrates and that growth in the superficial layers of the mucous membrane is inhibited only as long as the dye remains in the tissues.

EDWARD S. GODFREY, JR., M.D., Albany, N. Y.
Director, Division of Communicable Diseases,
State of New York Department of Health

TREATMENT OF HYPEREMESIS GRAVIDARUM

To the Editor—Referring to Dr. Udaeta's treatment of vomiting in pregnancy (*Madrid Letter, THE JOURNAL*, March 15, p. 922), through mere chance I stumbled on the conclusion that by transfusing blood from the husband to the pregnant wife, it is possible to control within twenty-four hours the most rebellious vomiting of pregnancy. I have tried this successfully in three cases. I have also two other cases, but in these the transfusion was not made by the vein-to-vein method but merely by taking 4 cc. of the donor's blood and, after mixing it with 1 cc. of 1 per cent sodium citrate solution injecting it into the recipient. This was repeated twice. The vomiting also stopped forty-eight hours after the first injection. I should not have dared to report this small number of cases had I not read in *THE JOURNAL* of Dr. Udaeta's theory of vomiting in pregnancy.

F. BALTOBANO C., M.D., San Juan de Limay, Nicaragua

"CURRENT CRITICISMS OF MEDICAL EDUCATION"

To the Editor—I have read with much interest the communication of Dr. William Allen Pusey concerning criticism of medical education (*THE JOURNAL*, August 9). I hope this matter will be threshed out until there is a clear understanding of a real and very serious situation. One of the best men among Chicago medical teachers said all this to me, and more, within the last year. Apparently each school is so afraid that its prestige might be damaged that it follows without protest along the path of education which has been laid out for it in the last fifteen or twenty years and which, to say the least, is leading into a bad situation. I have been in active general practice twenty-eight years, fifteen of them in a town of 10,000 where we had no hospital for eight years, and the last thirteen in a well equipped college community of 35,000. I think, therefore, that I have had a fair opportunity for observation of what is happening in the supply of physicians in the best agricultural part of the Mississippi Valley. I know now constantly a lot of students. It is not the rich boy who is necessarily the best prospect in any course of study. The one we all want is the one who has determination

enough and persistence enough to tackle a course when he cannot see his way clear to go through with it. A young man of good judgment, courage and persistence, who has an accredited high school diploma, perhaps a few hundred dollars, no family to help him, plenty of grit and nothing else, will do some hard thinking before he decides on a medical course today. We are making a lot of engineers and chemists and business men who ought to be doctors and good ones at that, but who are not going into medicine because they are intelligent enough to reckon the cost and the difficulties of a preparation for our profession.

Let me add that I am in no way dissatisfied with my own lot either past or present, and that I had an academic degree before beginning the study of medicine, as Dr. Pusey had, but I, nevertheless, am in full accord with the position taken in his address to the House of Delegates.

CLEAVES BENNETT, M.D., Champaign, Ill.

THE DISPENSING OF GLASSES

To the Editor—When a man has been fifty years in practice (as I have been), he must depend on the printed page for the bulk of his medical news. That accounts for my having but recently learned (THE JOURNAL July 26) that the Section on Ophthalmology passed a resolution deprecating the dispensing of glasses by medical men. May I venture the prediction that in practical results it will be disappointing. Perish the thought that any self-respecting ophthalmologist will persist in any practice that would render it increasingly difficult for the public to distinguish him from the optometrist, but such a man cannot waste his time in dodging imitators, and, in the dispensing of glasses, he was there first. He may even prefer to delegate this part of his work, but he can hardly refuse the practical demand of many patients that the work be done in this way (they trusting, and rightfully, that he will protect them from excessive cost), or ignore the real need of his inspection of the job, in situ, before delivery. As a matter of fact, this final inspection is the crux of the situation. After almost forty-five years of doing my work in this undignified (?) way (for the first forty-three years unavoidably by mail order from standard houses and, for the remainder, from a branch of one of them on the next street), and despite any charge that I may be wedded to my idols, I still see no better way ahead. The irreducible minimum of shop mistakes is still sufficiently large to make all sorts of trouble, and if some of my city confreres, who seem committed to the extraprofessional practice, could see me (as they might at odd times) correct the part they had too trustingly left to the optician, they might be more of my opinion. In conclusion, I must protest against the manifest interpretation of the resolution. So far I have seen no account of the Section on Practice of Medicine deprecating the dispensing of medicine by the general practitioner.

H. B. YOUNG, M.D., Burlington, Iowa

[NOTE.—The resolution referred to was taken by the Section on Ophthalmology but was not referred to the House of Delegates. It does not therefore constitute an action of the American Medical Association.—ED.]

Cerebrospinal Meningitis Epidemic in Nigeria—A considerable outbreak of cerebrospinal meningitis occurred in northern Nigeria, where 282 cases and 192 deaths were reported in February as against 124 cases and 64 deaths in January. Only a few cases were reported in Uganda, where serious epidemics had occurred in 1922 and 1923. It is pointed out that epidemics of this disease have become frequent in the northern tropical prairie belt of Africa during recent years. In the other parts of the world, however, cerebrospinal meningitis is stated to be less prevalent so far in 1924 than in 1923.—*Pub Health Rep* 39 1574 (June 27) 1924

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

CAUSES OF KIDNEY CALCULI

To the Editor—Although I have been a subscriber to THE JOURNAL for twenty-five consecutive years I do not remember to have ever troubled you with a query. Again, although I am approaching my seventy-ninth birthday I have never seen a similar case to the one in whose interest I now earnestly make this inquiry. What is the latest accepted theory as to the cause of the formation of renal calculi? And more pertinent still, what should be done to prevent their further recurrence? Three years ago I had this patient—a woman of 45 who leads a model life—exposed to the roentgen ray and found two large stones in one kidney and one in the other. These were successfully removed at the proper interval between operations. Today she is having another large stone removed from the right kidney. Evidently this has formed within three years and naturally the patient is greatly exercised to know how to prevent a return. Any aid that you can render will be greatly appreciated.

M. D. Ala

ANSWER—The most generally accepted theory as to the cause of kidney calculi is that of infection. Paul says, "If every case of nephrolithiasis could be investigated with sufficient thoroughness, a history of a preceding systemic infection could be elicited", also that the removal of a calculus from the upper urinary tract should be considered only an important preliminary step in the cure and that treatment of the concurrent infection must be thoroughly carried out if recurrence is to be avoided. C. H. Mayo regards the infection theory as the only tenable one. Sir Almoth Wright of London suggests that a search for a bacterial cause be made in every case of urinary calculus. Chetwood regards the cause as depending on whether the stone forms in a kidney in which there is no morbid process (primary calculus) or in a kidney in which there is some preexisting pathologic condition (secondary calculus), such as pyelitis. He says that urate, oxalate and cystine stones are nearly always primary, being formed in aseptic kidneys on account of causes most of which are not essentially renal. Phosphate and carbonate stones are usually deposited in connection with infection. There are various influences that probably play a part in the production of kidney stones, these are diet, diminution of fluid intake, excessive drinking of acid wines, excess of nitrogenous food, disturbances of metabolism and hereditary disposition. Weintraub believes that certain drugs are also contraindicated in renal colic due to precipitation of uric acid, such as cinchophen (unless accompanied by large doses of sodium bicarbonate). The diet should be free from substances that are rich in purins or highly acid. Notwithstanding unwarranted claims to the contrary, there is no remedy that will dissolve calculi. Chetwood says that piperazine taken with copious drafts of mineral water in doses of from 0.5 to 1 gm three times a day will help keep in solution uric acid salts, and with very small stones may dissolve the surface to some extent so as to aid in their dislodgment and passage, but the mechanical influence of the free diuresis caused by copious drafts of water may fulfil the same requirements. On the other hand, the Council on Pharmacy and Chemistry omitted Piperazine from New and Nonofficial Remedies in 1918 for the reason that it had been sufficiently tried to justify the conclusion that it was not of value as a uric acid solvent.

EXAMINATION OF INFANTS' EYES

To the Editor—I am wondering as to the possibilities of diagnosing a condition in which a child aged 2 months shows exophthalmos or at least a very marked showing of the whites of the eyes and seems to look down although it can look up.

P. W. VAN METRE, M.D., Rockwell City, Iowa

ANSWER—It is, of course, difficult to diagnose any ocular condition in a child so young that it cannot respond to the simple requests of the oculist. However, pure objective examination can frequently yield the key to the puzzle, and such examination should consist in a careful study of the pupillary reflexes and an analysis of any pathologic changes that may be found in the fundus. The cooperation necessary for examination of the ocular muscles or the visual fields is naturally out of the question.

make up of the report can easily be determined on. At the present time, they seem to be published for a variety of reasons. Pearl, in a facetious way, speculates as to why the statistics is given in the average annual report are published. He says:

"I believe the clue is found in the history of the matter. Hospitals began as public or private charities, to the support of which financial contributions were solicited. The evolu-

When the Hospital Information Bureau of the United Hospital Fund was organized in 1921, the matter was revived, and a central statistical service was offered to a group of hospitals in the city. The actual work began in 1923, with six hospitals participating by sending to the bureau certain information concerning their discharged patients on a uniform certificate, a copy of which is reproduced in Figure 1, and which was an adaptation, with slight modification, of the form proposed by the statistical committee mentioned above.

When received by the bureau, the data are transferred to punch cards, and are ready for tabulation and the working out of correlations. The tabulation of numerous tables based on the 30,000 cases for which information was received in 1923 is being completed and will be presented in a series of papers.

The principal tabulations link the condition of the hospital patient with his age, race, occupation and associated complications. Many additional correlations are chiefly of sociological significance and of value to the administrative authorities of the hospitals.

Recently, a group of obstetricians in New York, realizing the value of comparative statistics, asked the bureau to act as a repository of information concerning certain phases of obstetric experience. A certificate has been prepared, a copy of which is reproduced in Figures 2 and 3, and ten institutions have agreed to send in

periodically information about the cases of stillbirths and prematurity and infant deaths for a uniform tabulation by the bureau.

The bureau has no assured means for continuing this work or expanding it beyond the demonstration period of another year. It is hoped that by that time the value of such central statistical work to the community and to medical science, as well as to the hospitals, will be considered sufficiently dem-

tion of human nature having proceeded no farther than it had, it was felt necessary to furnish at frequent intervals documentary evidence of the moral rectitude of those persons responsible for the disbursement of the donated funds. The best possible evidence that some one has not absconded, or misused the institution's resources, is statistical proof that the hospital has been performing its proper function of admitting, treating and discharging patients. Beyond this essentially moral purpose, it is difficult to discover that the type of purely routine hospital statistics now referred to has, will or can serve any useful purpose."

If the results of therapeutic efforts of hospitals were presented in a uniform way by a considerable number of institutions throughout the country, a valuable contribution to medical science would be made. Realizing the slowness of agreement on a uniform nomenclature and method of tabulating, Dr. Charles F. Bolduan⁵ suggested a method of obviating the inherent difficulties. In brief, this plan provided for uniform discharge certificates to be adopted by a group of hospitals desiring to pool their statistical experience, these certificates to be edited by a medical registrar in the same way that death certificates are edited by a registrar of vital statistics. The value of this method is that it makes possible the preparation of uniform statistics from different hospitals without waiting for the adoption of a uniform nomenclature and system of recording. This plan was endorsed some time ago by a special committee formed in New York, and the Metropolitan Life Insurance Company was at that time ready to grant a certain amount of money for the conduct of an experiment. Several hospitals in New York City agreed to participate, but owing to the supervening war and some minor difficulties the plan was not carried out.

⁴ Pearl Raymond. Modern Methods in Handling Hospital Statistics. Bull. Johns Hopkins Hosp. 32: 184 (June) 1921.

⁵ Bolduan, C. F. Hospital Morbidity Statistics. A Practicable Method of Making Them Uniform and Preparing Them for Analytic Study, New York City Department of Health April 1913.

RECORD OF FETAL DEATH (STILLBIRTH) PREMATURE INFANT BORN ALIVE & INFANT DEATH	
HOSPITAL INFORMATION BUREAU 1924-25 NEW YORK, N. Y.	
Date of Death or Discharge	Diseases and Conditions in Mother
Case No. (as filed in hospital)	Tetanus _____ Syphilis _____
Hospital No. _____ Sent to No. _____	Chl. Myelitis _____ T. baculosa _____
Accommodation of Mother: Pr. _____ Semi Pr. _____ W. re _____	Focal Infection _____ Cardiac Dis. _____
Race of Patient: Mother _____	(1) Teeth _____
Father _____	(2) T. noli _____
Color of Patient: Mother _____	(3) Other (Specify) _____
F. has _____	Tumors in Pelvis _____ Uterine Displ. _____
Age of Mother _____	Type of F. life _____
Occupation of Mother: Housewife _____ Other (Specify) _____	Normal _____
Para _____	Abnormal (Specify type of pelvis) _____
Previous Pregnancies	Present on _____
(1) No. Stillbirths: viable _____	Vaginal _____ Breech _____
non-viable _____	Shoulder _____ Feet _____
(2) No. Premature Born Alive _____	Labor: Induced _____ Spontaneous _____
(3) No. Full Term Born Alive _____	Duration of Labor: 1st Stage _____ 2nd Stage _____
Period of Uterogestation _____ weeks	Operative Delivery _____
Date of Mother's Last Period _____	Forceps: High _____ Mid _____ Low _____
	Ventrian _____ Craniotomy _____
	Ventrian & Extraction _____ Cesarean _____

Fig. 2—Front of certificate for obstetric records

Stillbirth _____	Conditions rel. to Placenta, Membranes and Cord
Born Alive _____	Premature Separation of Placenta _____
Sex: Male _____ Female _____	Placenta Praevia _____
Weight at Birth _____	Abnormalities of Cord _____
Length at Birth _____	Prolapsed Cord _____
Conditions in Child	Shore Cord _____
Macerated _____	Cord around Neck _____
Cerebral Hemorrhage _____	Knots in Cord _____
Syphilis _____	
Spinal Injury _____	Autopsy _____
Atelactasis _____	Was autopsy performed (Answer Yes or No) _____
Congenital Abnormalities (specify) _____	State autopsy diagnosis _____
Other Conditions (specify) _____	
Data to be Given for Stillbirths Only	Data to be Given for Premature Inf. Born Alive
Period which death occurred _____	Condition on Discharge _____
Antenatal _____	Alive _____
Intrauterine _____	Dead _____
Postnatal (Heart beat but did not breathe) _____	Age at Time of Death or Discharge _____
	Data to be Given for Full Term Infants Born Alive but Dying during Stay in Hospital _____
	Age at Time of Death _____
	Condition of Mother on Discharge _____
	Alive _____
	Dead _____

Fig. 3—Back of certificate for obstetric records

onstrated to provide a method of joint financing, which will make possible the work on a large scale comprising the majority of the hospitals in New York City. Such a joint statistical service is not only more valuable from the point of view of valid contributions it can make to medical and hospital science but also is more economical than if individual hospitals endeavored to do it independently.

15 West Forty-Third Street

Arizona April Examination

Dr W O Sweek, secretary, Arizona Board of Medical Examiners, reports the written examination held at Phoenix, April 1 1924 The examination covered 10 subjects and included 100 questions An average of 75 per cent was required to pass One candidate, an osteopath, was examined and passed One candidate, also an osteopath, was licensed without examination Five candidates were licensed by reciprocity The following colleges were represented

PASSED		Per Cent
Osteopath		
College	LICENSED BY RECIPROCITY	Year Grad Reciprocity with
University of Maryland		(1918) Maryland
University Medical College of Kansas City		(1902) Oregon
Columbia University		(1914) Alabama
Western Reserve University		(1920) Utah
Memphis Hospital Medical College		(1904) Oklahoma
* No grade given		

Delaware June Examination

Dr H W Briggs, secretary, Medical Council of Delaware reports the written and practical examination of the Regular and Homeopathic Boards of Medical Examiners held at Wilmington, June 17-19 1924 The examinations covered 10 subjects and included 100 questions An average of 75 per cent was required to pass Of the 7 candidates examined, 6 passed and 1 failed One candidate was licensed by reciprocity The following colleges were represented

College	PASSED	Year Grad	Per Cent
Hahnemann Med. College and Hospital of Philadelphia		(1923)	92
Jefferson Medical College		(1922)	88.2
Temple University		(1920)	79.9
University of Pennsylvania		(1923)	85.5
Woman's Medical College of Pennsylvania		(1921)	82.6
University of Frankfurt-on-the-Main Germany		(1920)*	79.7
College	FAILED	Year Grad	Per Cent
University of Jurjev Russia		(1916)*	70.8
College	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Medico-Chirurgical College Philadelphia		(1915)	Penna
* Graduation not verified			

Book Notices

MEDICAL AND SANITARY INSPECTION OF SCHOOLS For the Health Officer the Physician the Nurse and the Teacher By S W Newmayer A B M D Assistant Chief Medical Inspector Bureau of Health Cloth Price \$4 Pp 462 with 85 illustrations Philadelphia Lea & Febiger, 1924

This is the second edition of a publication for workers in school sanitation and the medical inspection of schools The subject matter is well covered and is presented in a concise manner, and the arrangement is good The statistical matter seems well balanced, and the author cites enough examples to retain one's interest and not make dry reading The chapter on administration is particularly good, especially that part relating to the method of obtaining information of employees and for improving the efficiency of the staff The author stresses the fact that education is better than legislation for obtaining lasting results Again it is pointed out that the much discussed question of departmental responsibility of the board of health or the board of education can be vested in either, with good results The author agrees, however, that the department least dependent on political activity and most successful in obtaining appropriations achieves the best results One must agree with him that medical work in schools is the physician's responsibility, and should not be placed on teachers or nurses The ideal system proposed should require a thorough physical examination before a pupil is enrolled On the other hand children should be examined as frequently as possible, that is, every one or two years so that preventive advice may be given thus rendering curative efforts unnecessary It is rightly indicated that inspection should include both teachers and janitors School construction, plumbing and drainage, toilets and urinals, and the

water supply are touched on briefly, ventilation and heating rather fully The author discusses special types of classes, as open air, orthopedic, ocular, and those for deaf and backward children The chapter on communicable diseases could be enlarged In diphtheria it is recommended that classes be dismissed after cultures are taken The value of such a procedure is questionable Physical daily examinations of pupils is usually impossible, and the use of the "instructed teacher for diagnostic purposes is recommended The weight of present opinion seems to point to the value of physical examination in the lower grades and the concentration there so as to catch the defects and have them corrected early in life The chapter on physical defects could be strengthened by showing the ill results of physical defects and the beneficial results that may be obtained by their correction The chapter on nursing includes a concise description of the origin of school nursing In that part relating to appointments and number of nurses, the author implies an ideal condition of 3000 pupils to each nurse, which is considerably less than most nurses are required to supervise In the duties of a nurse the author employs in routine classroom inspections a nurse walking up and down the aisles which is in contrast to the established method of a private room There should be a chapter on deportment or behavioristic characteristics of children Taking everything into consideration, this is a valuable textbook for the use of health officers school physicians the school nurse and teachers

DIE THERAPIE DES WOCHENRETTIKERERS Von Privatdozent Dr Robert Köhler Im Assistenten der Abteilung Second edition Paper Pp 176 with 27 illustrations Leipzig Franz Deuticke 1924

This monograph is a complete compilation of available knowledge of its subject After a careful reading however, the conviction emerges that, with the large number of surgical and medical methods advocated by authorities for the treatment of puerperal sepsis, the one essential requisite is the discovery of a specific therapy that will be effective under all conditions Some secure a high incidence of recovery by expectant methods in septic abortion for example, while others obtain comparable results by radicalism of operation Neither, therefore, fulfils the purpose suggested Dr Köhler has accumulated a remarkable array of information on the treatment of puerperal sepsis He has divided the subject under the main captions prophylaxis and therapy Considerable space is allotted to the consideration of hysterectomy, the surgical treatment of peritonitis, and the ligation of the pelvic veins The medical treatment includes a discussion of the use of antiseptics (intravenous injections of sublimate the quinin group formaldehyd preparations, iodins and colloidal metals) Many pages are given to the elucidation of chemical therapy, including the preparations that are reputed to increase leukocytosis and bacterial therapy Dr Köhler aptly states that most of the vast production of literature on the therapy of sepsis has a pragmatic place rather than actual value to the patient with puerperal sepsis This manifestly must be true until the specific is discovered American authorities have long recognized that the bacteria of the vaginal discharges are relatively innocuous, the bacteria within the tissues themselves are the offenders, so that intra-uterine and vaginal douches are of no avail, and generally are distinctly harmful, for no fluid however, antiseptic, may reach the bacteria buried in the living tissues In America one recognizes only the dangers of curettage, with no benefits, in sepsis The author's statement that the only indication for entry of the uterus at term in the presence of sepsis, is severe hemorrhage is heartily approved but his recommendation of the nearly routine curettage of the septic uterus in the first three months of pregnancy is hardly likely to be accepted Nor can we understand why retained decidua is a menace demanding operative removal while the retained secundines at term must be left strictly alone His position that the only indications for the removal of the uterus are necrotic myoma and perforations of that organ is approved, but routine laparotomy, with drainage, for peritonitis is a doubtful procedure the mortality, at best is so high that, by the time the operation is undertaken the patient is so compromised that in the main expectancy dictates the American procedure The value of resection of the pelvic veins is still a question In

the clinic of his chief, Professor Halban, resection is done, if a thrombotic vein is palpable. The future scientist will probably develop three things that will solve the sepsis problem: (1) a definite method for the determination of bodily resistance to all bodily invasion of bacteria—as was promised by the opsonic index of Wright, (2) a specific prophylaxis for the bacteria ordinarily found in puerperal sepsis as well as that of surgical infections, as is the case with the typhoid vaccine, and (3) specific therapies for these bacteria, as is true with diphtheria, and a few other bacterial diseases. Until these are discovered, we all must discuss the treatment of puerperal sepsis in an empiric way. The bibliography is so extensive, covering seventeen pages (from the year 1903), that one need hardly go further for references to the modern methods advocated for the treatment of sepsis. Future editions of this monograph would be enhanced if a few pages were devoted to a summary of the principles of treatment employed in the Halban clinic.

HOSPITAL ORGANIZATION AND OPERATION. By Frank E. Chapman, Director Mount Sinai Hospital of Cleveland. Cloth. Price \$3.50. Pp. 270 with charts. New York: Macmillan Company, 1924.

The fifteen chapters in this book give suggestions and aid in the solution of hospital administrative problems. It contains a series of charts showing different schemes or types of internal organization. The adaptability of each scheme to different types of hospitals is discussed, and the advantages and shortcomings of each plan are pointed out. The ultimate and entire responsibility for the policies of a hospital is placed with the board of trustees, of which the superintendent is an ex officio member and who has final authority to administer the policies of the board. The medical staff is responsible for the medical policies of the hospital, subject to the direction of the board. One chapter is devoted to the medical staff, and considerable attention is given throughout the book to the relation of the physician to the hospital. Necessarily, much that is important in this connection has been omitted, since an adequate discussion of staff problems alone would fill a volume. A valuable feature is a complete outline of accounting procedure; a similar outline is given in regard to records. The many hints on the handling of personnel should be of real assistance to hospital superintendents. Conditions peculiar to the organization and the operation of a small hospital are given special attention. There is also a chart showing the organization of small hospitals. The book is carefully indexed so that items in regard to which information is desired can be readily referred to.

PECULIARITIES OF BEHAVIOR. Wandering Mania, Dipsomania, Kleptomania, Pyromania and Allied Impulsive Acts. In two volumes. By Wilhelm Stekel. Authorized English Version by James S. Van Teslaar. Cloth. Price \$8.50 per set. Pp. 669 inclusive. New York: Boni & Liveright, 1924.

These two volumes constitute the first of a complete series by Dr. Stekel, who is rather widely known as a writer on psychanalysis as related to medical practice. The present books concern wandering mania, dipsomania, kleptomania, pyromania and allied impulsive acts. Future volumes are to cover the subjects of male impotence, frigidity of women, and psychosexual infantilism. It is, of course, the belief of Dr. Stekel that the sexual life is fundamental to all human activities. From some of the simplest acts of childhood and youth, he traces the disordered actions of the adult. It is, conversely, his belief that a proper direction of the thoughts and actions of childhood will likewise lead to proper mental and social adjustments. He writes in a somewhat exuberant style, and summons to his support a vast literature of cases compiled not only from his own experience, but also from the available medical and lay literature. The larger part of the first volume is taken up by the report of one case of delirium, which occupies more than a hundred pages. The remainder deals largely with the sexual basis for stealing and drug addiction. The second volume is a conglomeration of cases of sterling, arson, gambling and various tics, all of which Stekel believes are the fulfilment of unsatisfied sexual desires. It would be futile to deny that the observations of Dr. Stekel are of great interest. This is a period in which psychiatrists and psychologists are concerned with problems

of education with an intensity seldom equaled at any previous period in the development of these sciences. No doubt, more conservative observers in these fields will feel that Stekel has overstressed certain elements in his analyses—as he undoubtedly has—and that he makes far too much of his case reports. Nevertheless, he has attracted wide attention by his sparkling, if not sensational, style, and will have a wide hearing. Unfortunately, those better fitted by scientific knowledge, judgment and restraint, to write about these matters, are not quite so well fitted in literary presentation.

A PRACTICAL TEXT BOOK OF INFECTION, IMMUNITY AND BIOLOGIC THERAPY. With Special Reference to Immunologic Technique. By John A. Kolmer, M.D., Dr. P.H., D.Sc., Professor of Pathology and Bacteriology in the Graduate School of Medicine, University of Pennsylvania. With an Introduction by Allen J. Smith, M.D., Sc.D., LL.D., Professor of Pathology in the School of Medicine of the University of Pennsylvania. Third edition. Cloth. Price \$12 net. Pp. 1210 with 202 illustrations. Philadelphia: W. B. Saunders Company, 1923.

The last edition of this book appeared six years ago. In the present edition most of the chapters are rewritten and new ones have been added. Chemotherapy is not discussed, because the author intends to publish such material as a separate book. The volume is particularly valuable to the student of medicine as well as to practitioners, not only because of the emphasis it places on theoretical conceptions, but also because of its greatly detailed accounts of the simplest forms of laboratory procedure and practical application to the patient. For example, in describing the way in which blood is drawn from a finger, there is adequate illustration and special emphasis on the advice that the lancing be done across the folds of skin. Rarely does the author describe any procedure, method or apparatus that he has not selected as the most advantageous and most generally accepted. In the description of the precipitin reaction, however, the tubes recommended seem too large for the best results. Extensive consideration is given to the diagnostic and therapeutic applications of various immunologic methods, and such subjects as the tuberculin tests and pollen reactions are given thorough discussion. In its field, the Kolmer book has achieved a place of outstanding importance.

DIE FUNKTIONSPRÜFUNG DES AKUSTISCHEN UND STATISCHEN LABYRINTHS. Von Dr. Maximilian Rauch. Paper. Price 60 cents. Pp. 71 with 12 illustrations. Vienna: Julius Springer, 1924.

Rauch has endeavored to cover the subject of the examination not only of the hearing apparatus but also of the static function. Tuning fork tests are described, but a good many of the modifications that have been suggested during recent years are not mentioned. Next there is a discussion of simulated unilateral deafness, but the important Stenger test is entirely omitted. The subject of the examination of the vestibular function is covered in much more detail than that of the acoustic function. Illustrations are given of the labyrinth by means of Rauch's models, which serve to make the subject more easily understood. In one of the concluding chapters, the author considers the various pathologic conditions involving the auditory apparatus, also some of the intercranial complications which may be present. A short work of this character does not, of course, cover the subject deeply, but this book does give the essentials of the ordinary functional examination of the hearing and of the vestibular apparatus of the inner ear.

A DIABETIC MANUAL FOR THE MUTUAL USE OF DOCTOR AND PATIENT. By Elliott P. Joslin, M.D., Clinical Professor of Medicine, Harvard Medical School. Third edition. Cloth. Price \$2. Pp. 211 with 19 illustrations. Philadelphia: Lea & Febiger, 1924.

Education of the diabetic patient as a necessary part of the treatment of his condition is recognized as a vital part of the control of the disease. In this education, Dr. Joslin has had an important share, not only in the preparation of one of the first satisfactory guide books for the patient, but also in the contribution of numerous popular articles, which have brought home important facts to aid in the prevention as well as the care of this disease. The present book is written in a pleasing style, and will be found invaluable by any diabetic patient who is willing to live in such a manner as to prolong his life.

Medicolegal

May Require Roentgen-Ray Examination Before Trial

(*Hollister v. Robertson* (N. Y.), 203 N. Y. Supp. 514)

The Supreme Court of New York, Appellate Division, Third Department, says it thinks that it should express its present views on the question of the power of the court under Section 873 of the Code of Civil Procedure, Civil Practice Act, Section 306, to require a roentgen-ray examination as a part of a physical examination before trial. There were various elements considered by this court in deciding the case of *Lasher v. S. Bolton & Sons* 161 App. Div. 381 146 N. Y. Supp. 321. So far, however, as the opinion of this court in that case indicated that the court was without power to require such a roentgen-ray examination, this court is unwilling to follow it. That decision was rendered just ten years ago and since that time there has been such a perfection of the science of taking such roentgen-ray pictures that their use, particularly in determining the presence and extent of bone injuries, has become a matter of universal use and the accepted method in the best medical practice. Any danger of burning or other bodily injury, when proper apparatus is used and skilful practitioners are employed, has apparently been eliminated. This court's present view is that it is not beyond the power of the court to require it in a proper case, but that its use may be required under proper safeguards whenever in the exercise of its discretion the court deems that the issues between the parties and the advancement of the science of the use of such apparatus fairly indicate the justice of requiring it in any particular case.

In this case the original order required a resident plaintiff to be examined outside the state. In that respect the order was without authority. The order appealed from which set aside the original order, vacated it without prejudice to a renewal by the defendant, of her motion for the plaintiff's physical examination. This court thinks it should affirm this order and leave the decision of the merits to the Special Term. On new papers, that court will be able to fix proper restrictions and directions, if the roentgen-ray examination is allowed.

Title to Act Requiring Reporting of Venereal Diseases

(*People v. Wohlford* (Mich.) 197 N. W. R. 558)

The Supreme Court of Michigan says that the defendant was convicted of a violation of the provision of Act 272 Public Acts of 1919 of that state, requiring physicians to report any case of venereal disease treated by them to the state department of health. The trial court set the conviction aside on the ground that the object of the act is not expressed in the title, as required by the constitution of the state. The title to the act is "An act to protect the public health, to prevent the spreading of venereal diseases, to prescribe the duties and powers of the state department of health and of local health officers and health boards with reference thereto, and to make an appropriation to carry out the provisions hereof." The purpose of this act is clearly indicated in the first words of the title "An act to protect the public health." The language that follows is suggestive that such protection is to be afforded by preventing the spread of venereal diseases, and that certain duties and powers are conferred on the state department of health to accomplish this result. The general purpose is clearly expressed. The means for its accomplishment are clearly stated. In the supreme court's opinion, it is sufficiently broad to permit the enactment of the several provisions that follow it. It is a well known fact that venereal diseases are communicable. Their spread can be prevented only by the segregation of the persons affected or other means known only to physicians and to the health authorities. The supreme court thinks that a physician reading the title to this act would know that it probably contained provisions relative to his treatment of such diseases. These diseases as a rule, are treated only by physicians, and an act to protect the

public health by prevention of their spread would necessarily to contain provisions regulating their conduct in such treatment. The title is certainly sufficient to give them notice that their interests are likely to be affected by the provisions of the act, and that is all that the constitutional provision requires in this respect. Wherefore the supreme court holds that the judgment entered must be set aside, and the trial court must proceed to sentence.

Allegations in Action for Services to Third Person

(*Powell McGee* (Texas), 258 S. W. R. 257)

The Court of Civil Appeals of Texas, in reversing a judgment that sustained a general demurrer to the plaintiff's petition under which he was seeking to recover about \$240 for medical services, medical supplies and nursing for one Ida Hartman, says that he alleged that he furnished these items to her at the special instance and request of the defendant, and that the defendant promised him to pay for them, whereby the defendant became liable to him for the respective amounts which the plaintiff alleged constituted the reasonable value of the services rendered. There was no suggestion in the plaintiff's petition that he furnished any of the items sued for on the credit of Ida Hartman and that he was looking to the defendant to pay the debt of Ida Hartman. No construction could be given to the plaintiff's allegations, except that of an original undertaking on the part of the defendant to pay for the items sued for. For this reason the trial court erred in sustaining a general demurrer to the plaintiff's petition, the court apparently acting on the theory that the plaintiff's cause of action was within the statute of frauds requiring undertakings to answer for the debts of others to be evidenced in writing.

The plaintiff also alleged a liability against the defendant on the theory that Ida Hartman was a dependent member of the defendant's family, and that the defendant was legally and morally responsible for necessities furnished her. This allegation was excepted to on the ground that the facts of dependency were not alleged, which exception was correctly sustained. If, on another trial, the plaintiff should desire to rely on this allegation, he should so amend his petition as to reflect the facts making the defendant liable for necessities furnished Ida Hartman.

Society Proceedings

COMING MEETINGS

- American Academy of Ophthalmology and Oto-Laryngology Montreal Canada Sept. 15-20 Dr. Luther C. Peter 1529 Spruce Street Philadelphia Secretary
- American Association of Obstetricians Gynecologists and Abdominal Surgeons Cleveland Sept. 18-20 Dr. James E. Davis 111 Josephine Avenue Detroit Secretary
- American Association of Railway Surgeons Chicago Oct. 15-17 Dr. Louis J. Mitchell 29 East Madison Street Chicago Secretary
- American Child Health Association Kansas City Mo. Oct. 15-17 Dr. Philip Van Ingen 125 East 71st Street New York Secretary
- American Electrotherapeutic Association New York Sept. 9-12 Dr. Richard Kovacs 223 E. 68th Street New York Secretary
- Colorado State Medical Society Denver Oct. 7-9 Dr. F. B. Stephenson Metropolitan Building Denver Secretary
- Delaware State Medical Society Milford Oct. 14-15 Dr. W. O. LaMotte Industrial Trust Building Wilmington Secretary
- Indiana State Medical Association Indianapolis Sept. 24-26 Dr. Charles N. Combs 221 South 6th Street Terre Haute Secretary
- Kentucky State Medical Association Louisville Sept. 23-25 Dr. A. T. McCormack 532 West Main Street Louisville Secretary
- Medical Association of the Southwest Kansas City Mo. Oct. 13-18 Dr. E. H. Skinner, Rialto Building Kansas City Mo. Secretary
- Michigan State Medical Society Mount Clemens Sept. 9-11 Dr. F. C. Warrshuis Powers Theatre Building Grand Rapids Secretary
- Minnesota State Medical Association St. Cloud Oct. 8-10 Dr. Carl B. Drake Guardian Life Building St. Paul Secretary
- Missouri Valley Medical Society of the Des Moines Sept. 17-19 Dr. Charles W. Fassett 115 E. 31st Street Kansas City Mo. Secretary
- North Dakota State Medical Association Bismarck Sept. 10-11 Dr. H. J. Rowe 5211 Upton Avenue S. Minneapolis Minn. Secretary
- Pennsylvania Medical Society of the State of Reading Oct. 6-9 Dr. W. F. Donaldson Jenkins Arcade Pittsburgh Secretary
- Vermont State Medical Society Burlington Oct. 9-10 Dr. W. G. Ricker St. Johnsbury Secretary
- Virginia Medical Society of Staunton Oct. 14-17 Miss Agnes V. Edwards 104½ West Grace Street, Richmond Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL for a period of three days. No foreign journals are available prior to 1920 nor domestic prior to 1923. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below

American Journal of Hygiene, Baltimore

4 241 409 (July) 1924

- Larval Flukes from China II E C Faust Baltimore—p 241
Life Tables for Population of New York State J V Deporte Baltimore—p 302
*Leptospira Icterohemorrhagiae in Wild Rats of Baltimore G H Robinson Baltimore—p 327
*Mortality of Chinese in United States Hawaii and Philippines C E A Winslow and Z W Koh New Haven Conn—p 330
*Bisecasonal Prevalence of Infantile Paralysis W L Aycock and P Eaton Boston—p 356
*Maternal and Infant Mortality in Physicians Families H Emerson New York—p 365
Origin of Pellicular Areas on Agar Cultures of Spore Bearing Bacteria H Andervont and C E Simon Baltimore—p 386
*Carnivorous Diet and Mammalian Infections with Intestinal Protozoa R W Hegner Baltimore—p 393

Leptospira in Rats of Baltimore—About 7 per cent of the wild rats of Baltimore were found by Robinson to be infected with *Leptospira icterohemorrhagiae*. The leptospiras were found in dense masses in certain tubules of the kidney. The urine was generally heavily infected. All of the infected rats were old, full grown animals. It was noted that the animals bearing traumatic scars were most likely to be infected. Therefore it is possible that wild rats are normally infected through abrasions of the skin.

Mortality of Chinese in United States and Possessions—Winslow and Koh found that the crude death rate of the Chinese in the United States is very high (27.1 per thousand, for the states of California, Oregon and Washington in 1919-1920, as against 12.4 for the total population of these states). In the city of Manila the crude mortality for the Chinese is much lower than in the United States, and in Hawaii it is lower still. The comparative figures for 1920 are registration states, 24.3, Manila, 18.4, Hawaii, 16.9. In both Manila and Hawaii the Chinese rates are intermediate between those for Caucasians and those for the native races (Hawaiian and Filipino). Analysis of deaths by cause indicates that the Chinese in all three regions studied exhibit a consistent and apparently characteristic excessive mortality from tuberculosis, from circulatory diseases and from genito-urinary diseases, as compared with Caucasians. It would appear that so far as these diseases are concerned inherent physical characteristics or racial habits must exert a specific predisposing influence. The excessive mortality from acute respiratory diseases and from external diseases which appear among the Chinese in the coast states are, on the other hand, apparently due to local climatic or social and environmental conditions or to the particular type of Chinese represented in the United States, since death rates from these causes are not excessive in Hawaii or in Manila.

Bisecasonal Prevalence of Infantile Paralysis—The seasonal prevalence of infantile paralysis in the United States over a period of eleven years (1912-1922) has been studied by Aycock and Eaton. There is a marked regularity in the summer prevalence of the disease. A definite secondary increase in its occurrence, usually in March or April, has been established. This increase occurs with fair regularity from year to year, and with a certain degree of uniformity in all parts of the country. This suggests the possibility of two modes of transmission of infantile paralysis.

Maternal and Infant Mortality in Physicians' Families—In spite of the errors inseparable from dealing with a small experience involving 1,974 pregnancies and 1,910 living children in the families of physicians in the United States, it would seem from Emerson's study that the maternal risk rate and the infant mortality rate in these families are far below any that have so far been reported during the same period of

time for the communities in which the majority of these families lived, namely the larger cities of the eastern United States. There is no evidence that this apparent superiority of protection in physicians' families is due solely or chiefly to better professional care provided in these households as comparable data for families of lawyers, teachers and other persons of presumably equal cultural acquirements and equal or more favorable economic status have not been obtained. It is, however, in all probability true that the facts of preventive medicine so far as they affect the survival of mothers from pregnancies and the escape of infants from the hazards of early life, are better understood and more commonly and effectively used in physicians' families than among other professional groups in the community.

Carnivorous Diet Unfavorable to Intestinal Protozoa—Data from various sources described by Hegner seem to prove that a carnivorous diet is unfavorable for the intestinal protozoa of mammals. Work is now in progress designed to test the value of a carnivorous diet in cases of human amebiasis, giardiasis and trichomoniasis.

American Journal of Physiology, Baltimore

69 211 454 (July) 1924

- Peristaltic Rush in Rabbit W C Alvarez and L J Mahoney San Francisco—p 211
Peristaltic Rush Depicted in Electro-enterogram W C Alvarez and L J Mahoney San Francisco—p 226
*Myenteric Reflex W C Alvarez San Francisco—p 229
Electrode and Clamp for Gastro-Intestinal Work W C Alvarez San Francisco—p 249
Reactions of Young Decerebrate Animals O R Langworthy Baltimore—p 254
Reactions of Intestinal Segments to Mechanical Stimulation R G Hoskins and E S Hunter Columbus—p 265
*Effect of Ingested Epinephrin Chlorid on Basal Metabolism F A Hitchcock Columbus—p 271
*Locomotion of Leukocytes III Rate of Human Lymphocytes in Vitro M McCutcheon Philadelphia—p 279
Electrical Records of Afferent Nerve Impulses from Muscular Receptors A Forbes C J Campbell and H B Williams Boston—p 283
Effect of Anesthetics on Catalase Content and Oxygen Consumption of Unicellular Organisms W E Burge Chicago—p 304
*Heat Regulation in Rabbits R W Keeton Chicago—p 307
Acid Response and Basal Secretion of Stomach R K S Lim Chicago—p 318
*Blood Diastase II Are Blood Diastases End Products of Metabolism? S J Cohen Chicago—p 334
Color Phenomena G N Stewart Cleveland—p 337
Secondary Excitation in Retina W R Amberson Philadelphia—p 354
Studies on Physiology of Liver F C Mann J L Bollmann and T B Magath Rochester Minn
*VIII Effect of Total Removal of Liver on Formation of Urea—p 371
*IX Formation of Bile Pigment After Removal of Liver—p 391
Circulatory Responses to Exercise in Man Diastolic Heart Tone H L White St Louis—p 410
Effect of Endocrine Preparations on Muscular Work N B Eddy Edmonton Canada—p 432
Physiologic Maximum Rate of Heart J Tulgan New York—p 441
Effect of Adrenalin on Patellar Tendon Reflex W W Tuttle Columbus—p 446

Mesenteric Reflex—The studies reported on by Alvarez show how important it is to use a smooth residueless diet in many gastro intestinal diseases. Suggestions are offered to explain some of the workings of the myenteric reflex. It is a question whether it is actually a reflex.

Effect of Epinephrin on Basal Metabolism—In ten out of eleven experiments on adult men the oral administration of epinephrin chlorid in doses of from 3 to 10 mg, was followed by a rise in the metabolic rate. The average increase was 69 per cent. It is believed by Hitchcock that this rise was caused by the absorption of adrenalin from the stomach and probably the upper intestine, and the extent of the rise indicates that the amount absorbed was of the order of 17 per cent of the quantity ingested although wide variations between different individuals were noted. Doses of 5 mg or more in some subjects cause severe gastric disturbances.

Locomotion of Leukocytes—The prevailing opinion that lymphocytes are capable of only extremely slow motion McCutcheon found to be erroneous, and probably due to too brief periods of observation.

Insensible Perspiration—The data obtained by Keeton suggest that 'insensible perspiration' in man is due to a direct vaporization of water from the tissues.

Blood Diastase—Cohen concludes that the diastases in the blood are not entirely useless nor end products of metabolism. They circulate in the blood. Some of them must be eliminated by the kidney, but the greater portion lie in readiness to be used in cases of emergency or increased need for their action.

Effect of Hepatectomy on Urea—Studies on the effect of total removal of the liver on the formation of urea have been made by Bollman, Mann and Magrath in more than ninety dogs, in which the results have not been complicated by loss of large amounts of blood or anesthesia while under observation. It was found that the production of urea in the body of the dog is entirely dependent on the presence of the liver, since urea formation ceases completely as soon as the liver is removed.

Formation of Bile Pigment After Hepatectomy—Mann et al. assert that the results of their experiments showed conclusively that there accumulates in the body after removal of the liver a pigment which in all its characteristics appears to be bilirubin. They were unable to determine where the pigment is formed. Its formation is not dependent on any of the intra-abdominal organs because it accumulates at approximately the same rate after they have all been ablated. The pigment accumulates progressively. It is usually noted in the first specimen of urine secreted after hepatectomy. In from three to six hours after the liver is removed, the plasma becomes yellow tinged. In animals that live sixteen hours or more, the sclera becomes tinged with yellow. At necropsy all the fatty tissue of the body is a dirty yellow color. This yellow pigment gives a positive reaction for bilirubin. Its rate of development, under certain conditions is accelerated by the intravenous injection of laked blood. The liver is not essential for the formation of bilirubin. It would seem highly probable that normally a high percentage of the bile pigment excreted by the liver is of extrahepatic origin.

American Journal of Public Health, New York

14 561 646 (July) 1924

- Cancer and Health Administrator E. R. Kelley Boston —p. 561
- Elements of Complete Mortality and Morbidity Report H. Emerson, New York —p. 566
- Hygiene of Wrestling Mats W. L. Mallmann, East Lansing Mich. —p. 569
- Presenting Rickets in Italian District in New York J. C. Gebhart New York —p. 571
- Outbreak of Typhoid Fever Due to Infected Ice J. A. Conway Hornell —p. 574
- *Experimental Relation of Bacteria of Paratyphoid Enteritidis Group to Poisonings by Food J. C. Geiger, E. Davis and H. Benson Chicago —p. 578
- Graphs in Public Health Reports H. T. Larsen Urbana Ill. —p. 585
- Periodic Health Examinations A. N. Thomson Brooklyn —p. 592
- City Health Department in Health Examination Campaign G. C. Ruhland Milwaukee —p. 594
- *Clinical Effects of So Called Moonshine Liquors F. J. Gerty, Chicago —p. 603
- *Examination of Sputum for Tubercle Bacilli P. Castleman Boston —p. 610

Relation of Bacteria to Food Poisoning—Normal cans of food inoculated with six strains of *Bacillus paratyphosus* A, B, C, two strains each of *B. enteritidis* and *B. vulgaris* (proteus) and incubated at 37° C. for ten days, showed decided growth increase to occur in many foods. Occasional changes in texture and odor of the food and changes in the appearance of the container take place which would ordinarily cause the food to be discarded. For instance, cans of corn and potted ham inoculated with *B. paratyphosus* A, B, C, and *B. vulgaris* (proteus) and then incubated became swells, but these foods were not affected by the growth of *B. enteritidis*. Containers of salmon became swells when inoculated with *B. paratyphosus* A and B, but not with the other organisms used. Containers of peas and peaches became swells when inoculated with *B. paratyphosus* B. There were no noticeable changes in any of the containers of food inoculated with *B. enteritidis*. Rabbits fed with food so inoculated and with boiled and untreated filtrates of these contaminated foods occasionally developed symptoms of diarrhea, etc.

Nature of Moonshine Poisoning—For practical purposes we must consider moonshine poisoning as alcoholism of a modified or aberrant type. It is a very prevalent form of

poisoning at present, and in Chicago, at least, is as frequently found as alcoholism was in the prewar and preprohibition periods. The physical and mental morbidity and the mortality are high. The type of poisoning seen differs from ordinary alcohol poisoning in the following ways: (a) The poison takes effect more rapidly, and the patient is brought to the hospital sooner because of the gravity of his symptoms. A smaller amount of the prevalent beverages is required to incipitate. (b) The effect is more profound and more often fatal. (c) Mental deterioration is a common sequel even after a few sips. (d) As far as the mental symptoms are concerned the clinical picture is usually blurred, thus making classification of cases more difficult. (e) Pneumonia has not so frequently been associated with the present form of poisoning as with alcoholism in the past. (f) Cirrhosis does not appear to be associated with the present form of alcoholism as it was with alcoholism in the past.

Examination of Sputum for Tubercle Bacilli—Castleman describes a combined shaking centrifuging method which is said to give a higher percentage of positive findings, and is not so difficult for the examiner, as the number of bacilli per field is more numerous than by other methods.

American Journal of Roentgenology and Radium Therapy, New York

11 487 601 (June) 1924

- Roentgen Ray Evidence of Colonic Secondary Changes R. W. Mills St. Louis —p. 487
- Restoration of Colonic Function H. W. Soper St. Louis —p. 503
- *Massive Collapse of Lung Cases G. W. Holmes Boston —p. 509
- Atelectasis as Roentgen Ray Sign of Foreign Body in Air Passages W. F. Manges Philadelphia —p. 517
- Osteoma of Sphenoid Bone and Dural Endothelioma Case J. D. Camp Rochester Minn. —p. 523
- Coolidge Tube Quantitative Variations G. M. MacKee and G. C. Andrews New York —p. 525
- Malignant Growths of Paranasal Sinuses Treated by Irradiation Electrocoagulation and Other Methods R. H. Stevens Detroit —p. 532
- *Deep Roentgen Ray and Radium Therapy in Carcinoma of Tonsil G. W. Crier Pittsburgh —p. 537
- Roentgen Ray Effects J. B. Murphy New York —p. 544
- *Roentgen Ray Treatment of Keloids H. H. Hazen Washington D. C. —p. 547
- Roentgen Ray Treatment of Bone Sarcoma M. B. Palmer Rochester, New York —p. 550

Massive Collapse of Lung—Holmes reports four cases. In one case a rather extensive abdominal operation was followed in two days by the onset of acute pulmonary symptoms that cleared up rapidly, and in which the clinical picture was not that of postoperative pneumonia. The second case was one of massive collapse of the right lung following operation for hernia under local anesthesia. The third patient was operated on for subcutaneous appendicitis. Ether anesthesia was uneventful except for noisy respirations and some mucus. He coughed considerably during recovery from the anesthetic and on the following day, but otherwise his convalescence was normal until the second day when he had a chill, with the onset of a cough, marked dyspnea and cyanosis. The roentgenogram made three days after operation shows the picture characteristic of massive collapse. The fourth case was one of repair of a bilateral inguinal hernia under epidural anesthesia, the operation being completed in an hour and a half. Cough and purulent sputum began almost at once after the operation. Examination showed dullness throughout the right chest, most marked at the base, with diminished breath sounds and tactile fremitus.

Radiotherapy for Carcinoma of Tonsil—Grier records ten cases of carcinoma of the tonsil. He first attempted to treat such cases by the use of the roentgen ray alone, directing the ray into the mouth through a speculum and treating the glands externally by roentgen-ray treatment. This treatment was absolutely ineffectual. The next method was the surface application of radium against the primary lesion and the treatment of the neck with the roentgen ray from without. The treatment of the primary lesion in this way was effective, provided the radium could be kept in contact with the lesion for a long enough time. The next step was the use of radium needles instead of radium applied to the surface, which increases the probability of the complete destruc-

tion of the lesion. The metastases in the neck have been treated by (1) ordinary roentgen-ray methods, either alone or following surgical removal, (2) radium applied externally and also in the wound following surgical removal, (3) deep therapy both before and after surgical removal. The best results have been obtained with deep therapy over the glands of the neck before anything else is done, followed by the use of radium on the primary lesion.

Roentgen-Ray Treatment of Keloids.—Hazen reports favorably on the treatment of keloids by the roentgen ray. The chief risk is that telangiectasia may develop. Small, hard lesions and lesions occurring on the face are extremely difficult to handle. Large lesions probably should be excised and irradiation begun immediately after the operation. Keloids in negroes are more difficult to treat than those in white persons.

Annals of Clinical Medicine, Baltimore

3:1105 (July) 1924

- Treatment of Syphilis from Experimental Point of View W H Brown and L Pearce New York—p 1
Neurocirculatory Asthenia H Brooks New York—p 11
Leeuwenhoek Jenner, Pasteur D S Lewis Montreal—p 21
*Tumor Thrombosis of Inferior Vena Cava Four Cases W M Simpson Ann Arbor Mich—p 29
*Clinical Auricular Flutter A M Wedd Pittsburgh—p 69
Ketosis and Carbohydrate Metabolism P A Shaffer St Louis—p 93
Possibilities of Thoracic Surgery E A Graham St Louis—p 96
Roentgenologic Visualization of Gallbladder E A Graham, St Louis—p 99

Tumor Thrombosis of Inferior Vena Cava.—Four cases of extensive tumor thrombosis of the inferior vena cava have been found at necropsy in the pathologic laboratory of the University of Michigan. In two of them, renal neoplasms reached the inferior vena cava by direct growth through the renal veins and produced tumor thrombosis in the middle third of the inferior vena cava, i e., in the portion between the renal and hepatic veins. The third case had its origin in a malignant teratoma testis, with extensive lumbar retroperitoneal metastases. From these metastases direct penetration of the wall of the inferior vena cava occurred. A solid cylinder of new growth filled the lumen for a distance of 5 cm beginning at a point 4 cm above the union of the common iliac veins. Induced thrombosis extended to a point just above the entrance of the renal veins. In the fourth case, the primary growth was a carcinoma of the pancreas with metastases to the lumbar chain of retroperitoneal lymph nodes. Direct invasion of the inferior vena cava occurred from these nodes, producing a tumor thrombosis of its lower two-thirds. This case is said to be unique in that it is the only case of vena cava tumor thrombosis from a neoplasm primary in the pancreas. Careful search of the literature reveals seventy-four previously reported cases of tumor thrombosis of the inferior vena cava authenticated by necropsy. Of this number the primary source of the neoplasm was determined in sixty-one cases.

Auricular Flutter.—In 1,200 electrocardiographic examinations reviewed by Wedd, there have been nine cases of flutter, 137 of fibrillation and fifteen of paroxysmal tachycardia. The action of digitalis, atropin and quinidin has been studied and the behavior of flutter under these drugs found to be consistent with the theory and the circus movement. Normal rhythm was restored by quinidin in three of six cases in which that drug was used. It is suggested that in the treatment of flutter the production of fibrillation should be avoided and attempts be made to convert flutter directly to normal rhythm by quinidin or a combination of digitalis and quinidin.

Annals of Medical History, New York

6:143-244 (June) 1924

- Sir William Bowman B Chance Philadelphia—p 143
Surgical Clinic of Charles University Prague H J John Cleveland—p 159
Carl Weigert H Morrison Boston—p 163
Lazzaro Spallanzani G E Burget Portland Ore—p 177
Sir William Buttes of Norfolk T N Toomey St Louis—p 185
References to Syphilis in Plays of Shakespeare F R Packard Philadelphia—p 194
James Atkinson and His Medical Bibliography J Ruhrah Baltimore—p 200
History of Medicine in Lower Canada M Charlton, Montreal—p 222

Annals of Surgery, Philadelphia

80:1160 (July) 1924

- Intracranial Arteriovenous Aneurysm C E Locke, Jr, San Francisco—p 1
*Chronic Productive Thyroiditis A V St George New York—p 25
Present Status of Surgical Treatment of Chronic Duodenal and Peptic Ulcer C H Peck New York—p 31
*Prevention of Acute Intestinal Obstruction C F Horine Baltimore—p 42
*Jejunostomy for Acute Intestinal Obstruction W E Lee and T McKean Downs Philadelphia—p 45
*Gunshot and Stab Wounds of Abdomen W L Condict New York—p 51
Appendiceal Fecal Fistula J B Deaver Philadelphia—p 56
Cysts of Spleen R H Fowler Brooklyn—p 58
*Coexistent Nephrolithiasis and Ureterolithiasis on Opposite Sides W F Fowler Rochester N Y—p 62
Knee Joint Injuries Management P H Kreuscher Chicago—p 69
Arthroplasty of Knee W C Campbell Memphis Tenn—p 88
Fractures About Upper End of Humerus Seventy Five Cases H E Santee New York—p 103
Idiopathic Osteopsathyrosis G W Wagoner Philadelphia—p 115
Systemic Blastomycosis W H Cole, St Louis—p 124

Chronic Productive Thyroiditis.—St George reports three cases of chronic productive thyroiditis, Riedel's iron-hard struma, benign granuloma of the thyroid (Ewing), or ligneous thyroiditis (Delore), a rare lesion of the thyroid gland. Its etiology is obscure. It is generally considered malignant clinically, but its benign nature is apparent on histologic examination. No recurrence has been reported in the literature. Operative removal is the usual form of treatment. However, it may be well worth while to attempt its removal by radium or roentgen-ray treatment, providing the benignity of the lesion is first established.

Prevention of Acute Intestinal Obstruction.—Horine believes that acute intestinal obstruction might be prevented in a large number of cases by more conservative drainage of the peritoneum. Draining the abdomen through the rectus and midline incision gives the coils of intestine a greater possibility of becoming obstructed, because loops of intestine may encircle the drain tract, besides leaving at times an organized band free in the peritoneal cavity. In lateral drainage, as in the McBurney incision where the drain is placed along the pelvic wall coils of intestine are less likely to encircle the tubes or drain tract. The upper abdomen can be drained from the side by instituting drainage through the lateral wall. Subphrenic abscesses of either side or subhepatic abscesses can be drained with equal result by this route. Drainage of the lower abdomen is more likely to produce an obstruction because most of the small intestine is situated below the umbilicus, thereby making drainage more difficult.

Jejunostomy for Acute Intestinal Obstruction.—Of the various methods of the surgical treatment of acute mechanical intestinal obstruction, Lee and Downs feel that a high jejunostomy performed with a rubber tube after the technic of a Witzel gastrostomy is the most satisfactory procedure. The procedure should be used, alone or in combination with other procedures in all cases of acute mechanical intestinal obstruction of over twenty-four hours duration which are submitted to operation. The stoma left on the withdrawal of the rubber tube closes promptly when the need for it has passed. This method when used as a temporary expedient will at times allow an apparently hopeless patient to improve to such an extent that more radical procedures may be attempted later when there is some hope of success.

Gunshot and Stab Wounds of Abdomen.—Twenty cases of gunshot perforations of the abdomen and thirty-two of stab wounds are analyzed by Condict. Of the twenty gunshot wounds there were eleven recoveries and nine deaths, a mortality of 45 per cent. and of the stab wounds there were twenty-three recoveries and nine deaths, a mortality of 28 per cent. The time elapsing from the receipt of injury to the operation varied from one-half to twenty-four hours with an average of slightly over two hours. The mesentery was perforated four times, the omentum five times and the inferior vena cava once. Omentum was found protruding from the abdomen five times and the intestine three times. Of the wounds of the hollow organs there was one of the gallbladder and common bile duct, ten of the stomach, two of the descend-

ing colon, two of the transverse colon and one of the sigmoid, six of the jejunum and six of the ileum. Of the solid organs there was one perforation of the pancreas, only two perforations of the spleen, three of the kidney and twelve of the liver. In no case, in this series, were the pelvic organs or the bladder involved. In only one instance in the series was a perforation overlooked at operation and found at autopsy and this case was an exceedingly difficult one—inasmuch as five other perforations were found.

Coexistent Nephrolithiasis and Ureterolithiasis—Fowler reports the case of a young man who suffered attacks of dull pain in the right side and back during several years. Finally a more severe attack occurred, but the vague subjective and objective symptoms and signs did not suggest calculus. The diagnosis was made by urinalysis, roentgenograms and cystoscopy.

Idiopathic Osteopsathyrosis—A case of idiopathic osteopsathyrosis (fragilitas ossium) occurring in a negro, 38 years of age, is reported by Wagoner. The patient had suffered, as the result of slight trauma, approximately forty-five fractures of the long bones. The calcium and phosphorus content of the blood plasma and the calcium, phosphorus and magnesium content of the bone were normal. The basal metabolic rate was increased, there were marked exophthalmus, palpable thyroid, immature genitalia, shallow pituitary fossa, mild tachycardia, blue sclerae and impaired hearing. No history of syphilis, infection or familial predisposition to bony fracture or disease could be elicited. There was no history of blue sclerae in the members of the immediate or remote family. Microscopic examination of the cross-section of the tibial shaft procured by amputation of the left leg showed a broken and thinned cortex, distended Haversian canals, increased bone resorption and new bone formation.

Archives of Internal Medicine, Chicago

34 1135 (July) 1924

- *Scapular Types W W Graves St Louis—p 1
- *Primary Sarcoma of Stomach H S Thatcher New York—p 27
- *Calcification of Heart Roentgenologic Demonstration T Scholz New York—p 32
- *Duodenal Drainage C M Jones Boston—p 60
- *Treatment of Asthma with Autogenous Vaccines W S Thomas and M D Touart New York—p 79
- Autogenous Vaccines in Diagnosis Asthma W S Thomas L W Famulener and M D Touart New York—p 85
- *Pellagra G D Head Minneapolis—p 93
- Acute Intestinal Obstruction I Types of Obstruction Produced Under Local Anesthesia R W Hausler and W C Foster Portland Ore—p 97
- Experimental Nephritis F R Nuzum and R Garland Santa Barbara, Calif—p 108
- Hemoglobin Content of Red Blood Cells in Relation to Surface Area I M Rabinovitch and G Streaun Montreal—p 124
- *Effect of Cholecystectomy on Gastric Secretion J Meyer, A C Ivy and E T McEnery, Chicago—p 129

Scapular Types—Observations on a certain family, in 1906, led Graves to classify human scapulae into convex, straight and concave types and to designate both the straight and concave types, the scaphoid. Investigations of living, fetal and skeletal (ancient and modern) material and of lower mammalian material revealed the hereditary nature, primal origin, of each scapular type. Comparative clinical and anthropometric studies of members of families through as many generations as possible showed that scapular type inheritance is usually dependent on scapular type matings, and that disease and possibly other poison factors may occasionally "alter" such inheritance. Investigations of comparable groups, representing living, necropsy and skeletal material of known age disclosed a finding as yet unparalleled in mammalian morphology: the age incidence of scapular types, i. e., the convex increases while the straight and concave decrease in frequency of occurrence in successive age periods from birth to old age. The results thus far secured from this study clearly show the usefulness of scapular types in studies of human heredity, longevity, morbidity and adaptability.

Primary Sarcoma of Stomach—Thatcher's case was one of large spindle cell sarcoma of the stomach, with metastatic sarcoma of the liver.

Calcification of Heart—Scholz reports a case in which calcium had been deposited in large quantities within the

necrosed apical portion of the heart following a gradually complete obliteration of the left coronary artery. The patient was able to carry on a moderately bearable life notwithstanding the fact that a large portion of the left ventricle had been practically put out of commission.

Duodenal Drainage—The results of duodenal analysis in 274 cases is reported by Jones. In addition to normal controls, 202 pathologic controls have been studied, including twenty-seven different disease entities. Fifty-seven cases of cholelithiasis have also been studied, in forty-two of which the diagnosis was proved by operative findings. In cases of cholelithiasis, characteristic sediments have been found. These findings consist of abnormal amounts of any or all crystalline elements. Bile-stained cellular elements which are interpreted as suggestive of an irritative process in the biliary tract, are also found in a large proportion of these cases. Other types of biliary tract disease, as a rule, also exhibit abnormal cellular or crystalline elements, but with no degree of constancy and the findings in such cases are suggestive, rather than diagnostic. The results of bile pigment estimations in the cases studied tend to confirm previous investigative findings. The diagnosis and treatment of biliary tract disease by duodenal drainage, on the theory that magnesium sulphate instillations into the duodenum produce gallbladder contractions and subsequent drainage, is criticized on the basis of clinical and experimental observations. Deductions as to the localization of biliary tract pathologic changes on the basis of so-called "A," "B" and "C" biles are similarly criticized. A conservative use of duodenal analysis as a therapeutic and diagnostic measure in carefully selected cases is advocated.

Autogenous Vaccine Therapy of Asthma—Sixty-two cases of asthma and asthmatic bronchitis, tested and treated with autogenous vaccines, form the basis of this report by Thomas and Touart. Thirty-two are completely relieved of their asthma, fourteen are markedly improved, eight are recent, and eight were failures. Long duration of the asthma did not seem to influence the result unfavorably.

Pellagra Defective Protein Theory—The case recorded by Head is said to support the defective protein theory relative to the etiology of the disease, in that the patient had been deprived of meat for about two years prior to the onset of the attack. Prompt recovery ensued on a generous meat diet and the use of sodium cacodylate intravenously. It is the first case to be reported from South Dakota, a supposedly nonpellagrous area.

Effect of Cholecystectomy on Gastric Secretion—Meyer et al. found that cholecystectomy in dogs prepared by the Pawlow pouch method does not cause a depression of gastric secretion. In three out of four dogs a variable degree of hypersecretion resulted. Bile in 50 cc amounts stimulates gastric secretion when given by stomach tube or applied to the intestinal mucosa. It is pointed out that bile, through its role in the digestion of fats, may have an indirect excitatory action on the gastric secretory mechanism.

Boston Medical and Surgical Journal

191 43 90 (July 10) 1924

- *Treatment of Scarlet Fever with Dochez's Antiscarlatinal Serum F G Blake New Haven Conn—p 43
 - Relation of Teaching Hospital to Medical School A S Begg Boston—p 47
 - Organization of Mental Hospital Staff W A Bryan, Worcester Mass—p 50
 - Responsibility of Hospital in Teaching of Surgery J E Briggs Boston—p 53
 - Tuberculosis in Children H D Chidwick Westfield Mass—p 58
 - Metabolism in Urticaria Scripta A W Rowe and F H McCrudden, Boston—p 60
- 191 91 140 (July 17) 1924
- Care of Tuberculous in Industry H J Howk Mount McGregor N Y—p 91
 - Preventorium Growth and Future W A Griffin, Sharon Mass—p 96
 - Active Use of Chest in Pulmonary Tuberculosis S Delano New Britain, Conn—p 101
 - Acute Appendicitis as Complication of Scarlet Fever Four Cases C L Thenebe Hartford Conn—p 112
 - Spine Fusion (Hibbs) in Treatment of Vertebral Tuberculosis R F Sullivan Melrose Mass—p 114

Dochez Serum for Scarlet Fever—A clinical and laboratory study made by Blake of Dochez's antiscarlatinal serum has shown that it is a valuable therapeutic agent in the treatment of scarlet fever. Intracutaneous injection of the serum in patients with scarlet fever produces a local blanching of the rash at the site of the injection. Intramuscular injection of the serum in therapeutic doses early in the disease is followed by rapid clinical cure as evidenced by critical fall of temperature and pulse to normal, rapid fading of the exanthem, and prompt return to a state of well being. The specific toxic substance present in the blood of patients with scarlet fever is neutralized in vitro by Dochez's serum. It promptly disappears from the blood following serum treatment. The blood serum of scarlet fever patients acquires the capacity to blanch the rash in scarlet fever within a few hours after serum treatment. The serum has now been used in twenty-six cases with prompt cure in all but one case. Not only has the serum been effective in early uncomplicated cases, but also in cases with septic complications.

Canadian Medical Association Journal, Montreal

14 573 670 (July) 1924

- *Lung Percussion J R Byers—p 580
- Concentration Method of Sputum Examination P M Andrus—p 581
- Radiographic Findings Diagnostic of Pulmonary Tuberculosis J S Pritchard—p 583
- Physical and Roentgen Ray Examination of Exservice Men A T Miller—p 585
- Symptoms of Upper Respiratory Tract Disease Simulating Tuberculosis R S Pentecost—p 591
- Septic Conditions of Chest W L Mann—p 593
- Differentiation and Treatment of Lung Abscess R G Ferguson—p 597
- Nontuberculous Pulmonary Diseases B H Hopkins—p 603
- Syphilis of Lung F W Blakeman—p 606
- *Overdiagnosis of Pulmonary Tuberculosis A D Adamson—p 610
- *Disordered Heart Action and Development of Tuberculosis A T Bond—p 613
- *Clinical and Experimental Use of Dreyer's Tuberculo-Antigen A H W Caulfield—p 616
- Complications Met in Sanatorium Practice A H Baker—p 619
- Neurasthenic Reaction W T B Mitchell—p 623
- Case of Addison's Disease Treated by Suprarenal Transplant M Currie—p 626
- Bullet Wound of Abdomen, Liver and Lung Recovery S H Corrigan—p 628
- Smallpox Epidemic R K Dewar—p 629

Lung Percussion—The method of percussion used by Byers consists essentially in establishing a basic note of resonance in one lung with which all other notes in any other part of that lung can be compared. With the patient preferably in a sitting position on a revolving stool he percusses over the whole lung with extremely light strokes against the distal phalanx of the pleximeter finger until he finds the most resonant note. This is the basic note. This point is marked with a pencil. Holding the pleximeter finger on the line of a radius and percussing very lightly, he proceeds in short advances, using one stroke to each move. At the first rise in pitch that the ear detects, a short line is drawn on the skin at a right angle to the radius. Having completed the first radius, a second is dealt with in a similar manner, and so on throughout the set. When all the radii have been completed, it will be found on the joining of all the short markings that there is a definite line established, and that one has a tonal contour of the basic note of the lung resonance.

Overdiagnosis of Pulmonary Tuberculosis—Slight variations from what are conceived to be normal physical findings unsupported by posttussic crepitations, or roentgen-ray shadows in the lung parenchyma, Adamson says, are insufficient evidence of pulmonary tuberculosis even in the presence of general symptoms of debility and cough. Occult tuberculosis, subliminal tuberculosis and peribronchial tuberculosis are not sufficiently proved to warrant their use as final diagnoses. The presence or absence of localized, peripheral, parenchymatous shadows, in well taken roentgen-ray films, is by far the most important point in making or breaking a diagnosis of early pulmonary tuberculosis.

Disordered Heart Action and Tuberculosis—From a review of 500 persons suffering from disordered heart action, it appears to Bond that tuberculosis among disordered heart action pensioners is not unduly common, nor in undue proportion to other common conditions, the finding of minimal

lesions several years after a discovery of disordered heart action is not a sufficient explanation of the effort syndrome, nor does it justify the conclusion that the original diagnosis was in error, the more remote the disordered heart action, the less likely the association.

Dreyer's Tuberculo-Antigen—This antigen has been tried by Caulfield in three directions, namely, experimentally with guinea-pigs, as an antigen in the routine serial testing of tuberculous serum for complement fixation, and therapeutically with both pulmonary and nonpulmonary forms of tuberculosis. This is merely a preliminary report and conclusions cannot be drawn. In the clinical trials made by thirteen physicians in about 150 cases, in none, or few, was the result regarded as necessarily due to the use of the antigen.

Suprarenal Transplant in Addison's Disease—In this case Currie transplanted the suprarenal gland of a sheep into an abdominal incision going down to the deep fascia. Later it appeared as if the transplant would not be a success. There was a discharge from one end of the incision, the patient suffered from nausea, diarrhea and cardiac distress. Notwithstanding the failure of the transplant it seemed that there had been some slight improvement for a few days as the result of its presence. Then both suprarenals of a sheep were transplanted. The glands were cut into fine strips and dropped into salt solution. The resulting tissue was skimmed out of the salt solution with a sterile spoon and dropped into the barrel of a 10 c.c. syringe. The needle was inserted deeply into the subcutaneous tissue on one side of the abdomen and about half the tissue was forced out as the needle was gradually withdrawn. The operation was repeated on the other side of the abdomen, altogether about 5 c.c. of gland and salt solution were injected. Three months afterward the patient is said to have been greatly improved.

Illinois Medical Journal, Oak Park

46 176 (July) 1924

- Reregistration vs. Rational Method of Dealing with Cult Problem E M Stanton Schenectady, N Y—p 6
- Medical Preparedness in Time of Peace M W Ireland Washington D C—p 32
- Christian Fenger's Work in Chicago W Van Hook Chicago—p 36
- Mesenteric Thrombosis O L Pelton Elgin—p 39
- Toxemias of Pregnancy G J Hagens Chicago—p 42
- Amebic Abscess of Liver Case T H Kelley Chicago—p 46
- Effects of Early Marriages C L Redfield Chicago—p 51
- Lumbar Puncture Technique H E Irish Chicago—p 54
- Hematuria Pathogenesis J S Eisenstaedt Chicago—p 56
- Visual Disturbance and Social Worker C Loeb Chicago—p 60
- Leadership in Modern Age C R Carlin Alton—p 65
- Systemic Pharyngitis B Lemchen Chicago—p 70
- Drug Addicts C E Sceeleth Chicago—p 70

Iowa State Medical Society Journal, Des Moines

14 285 346 (July) 1924

- Life Insurance Examinations M I Olsen, Des Moines—p 287
- Tuberculosis of Kidney A A Schultz Ft Dodge—p 294
- Malignancy of Tongue Case I N Crow Fairfield—p 300
- Differentiation Between Quick and Dead G W Crile Cleveland—p 305
- Management of Maternity W D Chapman Silvis Ill—p 309
- Ophthalmologist, Roentgenologist and Serologist Indispensable to Syphilologist R E Jameson Davenport—p 311
- Chorio Epithelioma from Hydatid Mole Two Cases G T McCauliff Webster City—p 313

Johns Hopkins Hospital Bulletin, Baltimore

35 197 228 (July) 1924

- *Influence of Intravenous Sodium Chlorid on Intestinal Absorption and Peristalsis W Hughson and J E Scarff Baltimore—p 197
- *Glycerin as Antiketogenic Substance in Diet of Diabetic Patients H M Thomas Jr Baltimore—p 201
- *Study of Lymph Pressure C S Beck Boston—p 206
- *Clinical Study of Hypernephroma M Cutler Baltimore—p 214
- *Opaque Mass for Roentgenology E C Hill Baltimore—p 218
- *Blood Grouping V Recognition of Three Types of Group II Blood C G Guthrie J F Pessel and J G Huck Lawrenceville N J—p 221

Effect of Hypertonic Salt Solution on Intestinal Absorption—Hughson and Scarff report their observations on the effect of the intravenous injections of hypertonic salt solution in relation to intestinal absorption. Intravenous injection of a 30 per cent sodium chlorid solution decreased the absorption

rate of water from an isolated loop of duodenum and jejunum in cats. The injection of this hypertonic solution furthermore caused active peristalsis, not only of the normal intestine, but of loops of bowel which had been subjected to various experimental procedures designed to imitate paresis. This holds true so long as the blood supply remains intact.

Antiketogenic Diet in Diabetes—From Thomas' experience glycerin would appear to be a valuable agent for increasing the antiketogenic content of the diet, thereby producing an increase in the amount of fully catabolized fat, while at the same time the carbohydrate content of the diet can be kept at a relatively low level. Its sphere of usefulness as a daily component of diabetic diets is limited to those cases in which the carbohydrate tolerance is slightly lower than that necessary to permit of a 'maintenance diet,' that is, of a diet that will prevent loss of weight when the patient resumes the daily routine of life and moderate work.

Lymph Pressure—The forces responsible for the production of pressure in the lymph system are (1) the pressure in the lymph capillaries as determined by the physical processes of osmosis, filtration and diffusion and as modified by changes in the permeability of the capillary wall, (2) changes in the external pressure on the lymph system, (3) the contractility of the lymph capillaries and the lymph vessels. According to Beck's observations the average pressure in dogs produced by the flow of lymph from the thoracic duct into the isolated venous cistern, during ether anesthesia, is 190 mm expressed in terms of lymph the highest pressure being 420 mm and the lowest pressure being 42 mm. The lymph pressure is influenced readily by pressures applied from without the lymphatic system, such as pressure on the abdomen or marked changes in the intrathoracic pressure. Lymphagogues, when injected into the blood stream are followed by a rise in the lymph pressure. Such substances are sodium chlorid, dextrose, histamin, epinephrin and peptone. Hypertonic, hypotonic and isotonic salt solutions administered intramuscularly or intra-abdominally have no effect on the lymph pressure, when injected into the blood stream, hypertonic salt solution is followed by a marked rise, and isotonic salt solution by a slight rise, while hypotonic salt solution has no effect, nor does ligation of the portal vein. Bleeding is followed by a slight fall.

Hypernephroma—During the past sixteen years thirty-two cases of hypernephroma came to operation in various services of the Johns Hopkins Hospital. Cutler analyzes these cases. Nephrectomy was performed in all of them. Recent pathologic studies have demonstrated that a large proportion of the reported hypernephromas are in reality renal adenocarcinomas. Sixty-two per cent of the cases occurred between the ages of 40 and 60. Each kidney was involved with equal frequency. Injury was mentioned as a possible inciting factor in 10 per cent of the cases. The average duration of symptoms from the time of appearance of the initial symptom to the time of operation was three and one-half years. Hematuria was by far the commonest symptom. Gross hematuria occurred in 81 per cent of the cases, microscopic hematuria in 94 per cent. Hematuria was the initial symptom in 68 per cent of the cases. The initial hematuria commonly followed some form of overexertion, it was usually profuse, intermittent and irregular. Pain, which was the second commonest symptom, was present in 91 per cent of the cases, renal colic in 66½ per cent, dysuria and urinary retention in 25 per cent, and frequency of urination in only 12 per cent. A tumor was palpated on physical examination in 80 per cent of the cases. Constitutional symptoms, consisting of weakness, general malaise, dyspnea, and loss of weight were present in 60 per cent. Of all the patients operated on two failed to survive the operation, and four more died in the hospital. Four are known to have died since leaving the hospital at intervals varying between one and three years. Eight are known to be living at intervals of eight months to nine years, and fourteen could not be traced.

Opaque Mass for Roentgenology—An injection mass made up of from 15 to 18 gm bismuth oxychlorid (prepared for roentgen-ray work), from 5 to 10 gm acacia and water

sufficient to bring the quantity up to 100 cc has proved of value to Hill in studying the circulation. By repeated semi-filterings the mass may be reduced to a suspension of bismuth containing particles of from 4 to 8 microns and thus pass through capillaries.

Blood Group II—Guthrie, Pessel and Huck assert that there are at least three distinct types of blood included in Group II. From the results of cross agglutination and absorption tests, they assign to these three types the following formulae: A-bc, AD-bc, AD-b.

Journal of Medical Research, Boston

44 383 488 (June) 1924

- Kurloff Bodies in Blood of Guinea Pigs L Bender Chicago—p 383
- Congenital Cystic Omenta Kidneys and Livers in Identical Guinea Pig Twins A W Meyer Stanford University, Calif—p 401
- Case of Malignant Endothelioma Necropsy N C Foot, Cincinnati—p 417
- Influence of Roentgen Ray on Experimental Syphilis in Rabbit G S Craham W M Baldwin and W K Grigg Albany N Y—p 431
- Effect of Heat and Cold on Amebocyte Tissue of Limulus L Loeb and D Drake St Louis—p 447
- Studies on Hypertension Relation of Age to Size of Heart E T Bell and T B Hartzell, Minneapolis—p 473

Medical Journal and Record, New York

120 53 100 (July) 1924

- Social Significance of Medicine L F Barker Baltimore—p 53
- Operation for Inguinal Hernia E Andrews Chicago—p 57
- *Kidney Function in Osteitis Deformans Case F J Scully Hot Springs Ark—p 62
- Phlebitis and Thrombophlebitis Migrants J Harkavy New York—p 64
- Nonsurgical Biliary Drainage M Golob New York—p 69
- Procedure for Relief of Alb Deformity in Cases in Adult Associated with Hare Lip J E Sheehan New York—p 72
- *Hydatid Brain Cyst J W Shuman Los Angeles—p 73
- Value of Bacterins in Practice E C Lavery Louisville, Ky—p 74

SUPPLEMENT

- Cancer of Colon E G Slesinger London—p xvii
- Metastasis from Symptomless Cancer in Esophagus G B New and P P Vinson Rochester Minn—p xix
- Diagnosis of Spinal Metastases with Primary Focus in Chest T Scholz New York—p xx
- Unusual Massive Tumor of Abdomen J Friedewald and W A Fisher Baltimore—p xxv
- Ligature Treatment of New Growths A H May Buffalo—p xxvii
- Cancer of Hepatic Flexure of Colon J Peutot Lyons France—p xxviii

Kidney Function in Osteitis Deformans—In the case cited by Scully laboratory examination of the urine showed a heavy trace of albumin and many hyaline casts. The volume for twenty-four hours was 960 cc, the specific gravity 1.016 and the reaction acid. A kidney function test showed an excretion of 10 per cent of phenolsulphonaphthalein in two hours on one observation and 15 per cent on a second observation. Chemical examination of the blood, November 10, gave 265 mg of urea, 28 mg of uric acid, 56 mg of non-protein nitrogen and 14 mg of creatinin per hundred cubic centimeters. November 25 the tests showed 40 mg of uric acid and 102 mg of creatinin, and on December 12, 155 mg of urea, 45 mg of uric acid, 462 mg of nonprotein nitrogen and 18 mg of creatinin per hundred cubic centimeters. A blood count showed 90 per cent hemoglobin, 5,120,000 red cells and 7,000 white cells. The Wassermann test was negative.

Hydatid Brain Cyst—Shuman's case was one of hydatid cyst within the medulla of the brain, encroaching on the cortex only in the right quadrate lobule. Death was due to intracranial pressure.

Missouri State Medical Association Journal, St Louis

21 209 256 (July) 1924

- Victories of Medicine G W Robinson, Kansas City—p 209
- Future of Medicine F C Warnshuis Grand Rapids—p 214
- Studies of Disorders of Ductless Glands W Engelbach St Louis—p 217

Southwestern Medicine, Phoenix, Ariz

8 305 356 (July) 1924

- Medical Education of Public J W Stoffer Gallup N M—p 305
- Renal Syphilis Case E B Rogers El Paso—p 309
- Acute Infectious Jaundice, Eleven Cases, R E Thomas Los Angeles—p 314

- Chronic Infections Endocarditis Two Cases C S Kibler, Tucson — p 318
Insulin in Diabetes B Smith Los Angeles —p 324
Breal Metabolism P B Newcomb Tucson —p 327
Fractured Collar Bones and Thighs Without Deformity C W Hawley Chicago —p 331
Maxillary Sinusitis Four Cases M C Comer, Tucson —p 333

Wisconsin Medical Journal, Milwaukee

23 69 122 (July) 1924

- Cautery Treatment of Chronic Gonorrhea in Female H W Shutter, Milwaukee —p 69
Uterine Obstruction W E Bannen La Crosse —p 71
Obstructing Stricture of Male Urethra J C Sargent, Milwaukee —p 75
Lower Urinary Tract Infections F T Mielke Appleton —p 78
Benign Hypertrophy of Prostate I R Sisk Madison —p 82

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London

5 123 198 (June) 1924

- *Pathogenicity of *Bacillus Coli* T H C Benians —p 123
- Glycogenic Function of Liver Endocrine Control W Cramer —p 128
- *Bacterial Factor in Dental Caries J K Clarke —p 141
- Fluid Measurements with Capillary Pipet A Fleming —p 148
- *Silica in Determining *Bacillus Tuberculosis* Infections E H Kettle —p 158
- *Effect of Vaccines on Lysozyme Content of Tissues and Secretions V D Allison —p 165
- *Group Specificity of Antigens Derived from Acid Fast Bacilli C C Twort E W Todd and R J Perkins —p 171
- *Etiology of Dental Caries J McIntosh W W James and P Lazarus Barlow —p 175
- II *Bacillus Acidophilus Odontolyticus*
- III Production of Artificial Caries
- Immunizing Properties of Bacterial Antigens N S Ferry and L W Fisher —p 185

Pathogenicity of *Bacillus Coli*—Evidence is presented by Benians which shows that if gum is put into the peritoneum and *Bacillus coli* into the blood stream the bacilli will infect the peritoneum, although not in sufficient numbers to set up an acute disease. In the immunized animal the peritoneum is quickly sterilized even if large numbers of living bacteria are present in gum. In such animals the bacteria survive a far shorter time in the blood stream than in normal animals, but no increased bactericidal power of the serum was demonstrated *in vitro*. The presence of bile in the blood stream with living bacteria leads to a rapid invasion of gum in the peritoneum and a fatal infection in the nonimmunized animal, but previously inoculated animals survive it easily. In certain circumstances *B coli* in the peritoneum may be immensely pathogenic. The advantage of a preliminary immunization with *B coli* as a protection against infection with this organism is demonstrated.

Bacterial Factor in Dental Caries—The evidence presented by Clarke suggests that caries is due to infection of the teeth, in certain circumstances not yet made clear, by a hitherto undescribed streptococcus, *Streptococcus mutans*. Whether the primary infection is facilitated by defective structure of the teeth remains to be proved.

Silica Determines Site of Tuberculosis Infections—Kettle states that tubercle bacilli injected into the circulation of rabbits and mice tend to settle in localized subcutaneous lesions produced by various agents which bring increased vascularity and tissue necrosis. When silica is the provocative agent, the determination of the organisms to the inflammatory focus is invariable and the bacilli proliferate extensively in such lesions. Inasmuch as similar results are not obtained with other provocative agents silica appears to have some specific action on the growth of the tubercle bacillus in the tissues.

Effect of Vaccines on Lysozyme—Allison asserts that the lysozyme content of the tissues or tissue fluids of man and animals cannot be increased by active immunization.

Defatted Antigens in Complement Fixation Test—For the diagnosis of human tuberculosis by the complement fixation test, it appears from a small number of reactions carried out by

Twort et al that the defatted antigens of *Bacillus phlei* or *B tuberculosis* are markedly superior to the whole bacilli, the same applies to animals' serums the titers of which are very low. In tuberculous guinea-pigs no appreciable beneficial effect has been noted by the use of defatted *B phlei* vaccines.

Etiology of Dental Caries—McIntosh James and Lazarus-Barlow discuss further the relationships of *Bacillus acidophilus-odontolyticus* to dental caries, its distribution in nature and the production of experimental caries. The frequent occurrence of this bacillus in milk suggests this medium as an important source of infection. Experiments to produce caries artificially in rabbits have failed. There is slight evidence of success in the case of a monkey.

British Journal of Ophthalmology, London

S 257 304 (June) 1924

- Influence of Calcium Chlorid on Production of Ocular Fluid and on Ocular Pressure G T Rochat and J S Steyn —p 257
Arabic Bronze Needle from Antiquity for Depression of Cataract S Holth —p 266
Improved Punch Forceps for Tangential and Extralimbal Sclerectomy in Chronic Glaucoma S Holth —p 269
Surgical Method of Dealing with Keratoconus G Young —p 270
Operation of Congenital Ptosis G Young —p 272
Case of Ectopia Lentis with Coloboma D V Giri —p 275
Case of Congenital Miosis T H Cresswell —p 278
Eye and Photographic Lenses V C Verbitzky —p 280

British Medical Journal, London

1 1119 1162 (June 28) 1924

- *Changing Standpoints in Metabolic Diseases Diabetes Nephritis Jaundice W L Brown —p 1119
- *Plea for Clinical Physiology J Mackenzie —p 1122
- Action of Quinin on Protein Metabolism Respiratory Exchange and Heat Function S W Hardikar —p 1125
- *Tuberculoma of Pituitary T W Letchworth —p 1127
- Temperature and Saturation of Exhaled Air in Relation to Catarrhal Infections P Tozer and L Hill —p 1127
- *Myoclonic Encephalitis Treated by Patient's Spinal Fluid R W Power —p 1129
- Recurrent Intussusception J H Clarke —p 1129
- Röntgen Rays in Lupus of Nasal Mucous Membrane H Flecker —p 1129
- Angina Pectoris Death from Coronary Embolism C Helm —p 1129

Acidemia and Alkalemia Cause Dyspnea—Brown sums up his paper as follows. When acidemia is associated with dyspnea the acidemia is the cause of the breathlessness, when alkalemia and dyspnea are associated, the alkalemia is the result of the dyspnea. Recognition of these facts is of great importance in selecting the appropriate measures of treatment.

Importance of Clinical Physiology—If experimental physiology is to benefit suffering humanity, Mackenzie says that a supplementary physiology dealing with the normal activities and those produced by disease must be employed and experiment should be guided by the needs of the clinical observer. To a physiologist who is also a clinical observer the kind of experiment that is required is bound to be much clearer than the somewhat blind endeavors that have characterized the attempts to solve clinical problems in the past. If the kind of physiology which clinical observation can reveal be not acquired most of the enterprises which are concerned in the solution of the problems of disease will result in failure or achieve a measure of success not in proportion to the time and energy spent. The knowledge of physiology obtained in this way is limited to explaining the derangements which result in ill health, and cannot of itself solve the problems of disease, but it is an essential adjunct. Until it is acquired, the work of the bacteriologist, of the pharmacologist of the biochemist as well as of the clinician, will fall far short of attaining the objects of their endeavor.

Tuberculoma of Pituitary—The only localizing symptoms in Letchworth's case were loss of sight and extreme polyuria.

Myoclonic Encephalitis Treated by Patient's Spinal Fluid—Power's patient had myoclonic spasms of the abdominal muscles—about seventy to the minute. Daily lumbar puncture gave no relief. On the fifth day 10 cc of the spinal fluid withdrawn was injected intravenously. Temporary relief followed. Twenty-four hours later this procedure was repeated. Permanent relief from pain and spasms resulted.

Indian Journal of Medicine, Calcutta

4 177 220 (December) 1923

- Neurosyphilis S C Sen Gupta—p 177
 Cancer Problem K K Chatterji—p 193
 Antiprotozoal Properties of Emetin Hydrochlorid K K Chatterji—p 198
 Treatment of Kala Azar N N Ghosh—p 201
 Extraction of Foreign Bodies from Ear with Cystotome R Prasad—p 206

Indian Medical Record, Calcutta

43 161 192 (June) 1924

- Case of Raynaud's Disease S L Sarkar and S N Maitra—p 161
 Medicolegal Responsibilities in Cases of Poisoning T P Chatterji—p 163
 Protein Sensitization and Desensitization A Ray—p 166
 Minor Endocrine Glands Testis S K Mukherji—p 175

Irish Journal of Medical Science, Dublin

5 245 292 (June) 1924

- Coombe Hospital (Maternity) Report 1923 L Cassidy, T M Healy and J N Hodgeman—p 245

Journal of Biochemistry, Tokyo

3 283 474 (April) 1924

- Absorption of Ammonia by Soils K Miyake M Sugawara and K Nakamura—p 283
 Nature of Acidity After Addition of Soybean Cake to Rice Field K Miyake and I Tamachi—p 305
 Effect of Various Substances on Erythrocytes S Aikuchi—p 325
 Gliadin I Eto—p 373
 Physicochemical Properties of Phospholipin II Effect of Albumin on Physicochemical Properties of Lecithin N Fujii—p 393
 *Normal Value of Sugar Excretion Threshold M Nakayama—p 407
 *Effect of Salt and Globulin on Agglutination Phenomenon T Shionoya—p 423
 *Effect of Albumin-Fat Diet on Carbohydrate Metabolism N Kageura—p 457
 Effect of Salt Solution on Erythrocytes in Blood J Umezawa—p 461

Blood Sugar Curves in Fasting Nondiabetics—Nakayama made blood sugar determinations on 202 nondiabetics who were fasting. The percentage varied from 0.06 to 0.12, with an average of 0.088 per cent.

Effect of Globulin on Agglutination Phenomenon—Shionoya asserts that following on the injection of epinephrin and pilocarpin in nonsyphilitics, a reaction not unlike the Wassermann reaction is obtained. It is based on an increase of blood serum globulin. Therefore, the Wassermann test should not be performed after certain medicinal agents have been administered.

Effect of Albumin-Fat Diet on Carbohydrate Metabolism—Kageura's experiments show that the diminished glycogen formation in the liver of animals on an albumin-fat diet is largely the result of a lowered liver function and not of an altered blood content.

Journal of Tropical Medicine and Hygiene, London

27 175 186 (June 16) 1924

- *Mosquito Protection of Water Tanks A E Horn—p 175

Mosquito Protection of Water Tanks—The apparatus used by Horn consists of a thin metal plate, roughly 11 inches by 8 inches, with an opening in it about 6 by 5 inches. On the under surface a flange is welded around this opening, 1 inch deep at one end, with sides opening to 2 inches at the opposite end. Impinging against the under surface of this flange, and fitting accurately in apposition with it when closed, is a flat metal plate, which is hinged to a wire rod immediately behind the shallow end of the flange, and with a small counterbalancing weight just sufficiently heavy to keep it comfortably apposed to the flange when at rest. The opening in the upper plate is guarded by a few crossed wires to prevent birds, lizards, etc., from falling unwillingly through the trap door into the water receptacle. The whole apparatus is galvanized and so rendered rust proof. It is fixed by screws through its upper surface to the inlet in the top of the water tank or cask, and receives the rain water coming through the down pipe. While at rest it remains completely closed by the counterbalancing weight and prevents the access of mosquitoes to the enclosed water. With water falling on it the trap swings open to allow a passage, and automatically closes when the fall ceases. It accommodates itself equally to a

heavy rush of water or a lighter fall, and although mosquito eggs may be washed from a defective roof gutter through the trap into the tank, it does not allow egress of the adult mosquito, even while opened by the passage of water through it.

Lancet, London

2 152 (July 5) 1924

- *Migraine A T Hurst—p 1
 *Therapeutic Uses of High Carbohydrate Diets T I Bennett—p 6
 Splanchnic Analgesia O S Hillman—p 9
 *Flocculation and Complement Fixation in Syphilis E W Todd—p 12
 Diagnosis and Treatment of Diabetes Mellitus in Hospital and General Practice E G B Calvert—p 14
 Hepatic Abscess as Complication of Appendicitis E G Slesinger—p 19
 Case of Primary Carcinoma of Liver E W Johnson—p 19

Eyestrain as Cause of Migraine—Hurst stresses the point that the most important part of treatment of migraine is the prevention of eyestrain. He urges practitioners, physicians and oculists, whose past experience has led them to doubt the truth of this statement, to put it to the test once more. He asserts that he has never yet seen a case in which eyestrain was not present, and has only seen two in which its correction did not either cure the patient or lead to very considerable improvement. He says that the reason the importance of the ocular factor is not more widely accepted is that few oculists trouble to give the attention to a patient with migraine that he requires. It is no doubt easy to correct an ordinary case of myopia, hypermetropia, or even astigmatism at a single interview of fifteen to thirty minutes. But it is quite impossible to do this for a patient with migraine, as the smallest errors of refraction and every disturbance in muscle balance require correction with absolute accuracy. This cannot be done in a hurry. At least three examinations on different days are required, the second being with the aid of a cycloplegic, and the third seventy-two hours later, when the effect of the drug has completely disappeared. The effect of preventing ocular strain is generally felt at once. In many cases attacks which had occurred at frequent intervals for many years, cease immediately—never to return. In other cases they disappear less dramatically, but none the less surely, the intervals between them become more prolonged and they become less severe in character. Occasionally they actually become more intense and frequent for a short period, as with severe errors of refraction and disturbances in binocular muscle balance it may take some time for the patient to become accustomed to the new conditions and for the strained extrinsic and intrinsic muscles of the eyes to relax. It is then often necessary to begin with a partial correction, and only gradually increase it until it is complete.

Use of High Carbohydrate Diets—A classification is given by Bennett which includes many of the indications for high carbohydrate diets: (1) certain specific infections, (a) pneumococcal pneumonia, (b) typhoid and paratyphoid infections, (c) *Bacillus coli-communis* infections, (2) certain infections of unknown origin, (3) diseases of the heart and blood vessels, (4) respiratory diseases, which are seldom indications for this diet, (5) diseases of the alimentary system, such as peptic ulcer, undernutrition and disorders of the liver, (6) diseases of the renal system. Of foods the most useful group is that which is known in France as Pâtes—substances prepared from flour, arrowroot, sago and other starchy substances. In chronic cases fresh fruit is often invaluable.

Flocculation and Complement Fixation in Syphilis—Todd presents evidence that the sigma reaction is more delicate than the Wassermann reaction in well treated cases of syphilis and in imperfectly treated cases of long standing, but it appears that reliance solely on either method may lead to a very small proportion of positive serums being missed. In the case of cerebrospinal fluids the sigma reaction appears to have little advantage over the Wassermann reaction owing to the fact that in the latter reaction a much larger quantity of cerebrospinal fluid than of serum can be used, whereas in the sigma reaction the quantities are the same. From the limited number of primary cases examined it appears that the sigma reaction usually becomes positive before the Wassermann reaction, but occasionally a positive Wassermann reaction is obtained first.

Annales de l'Institut Pasteur, Paris

38 449 528 (June) 1924

- Functional Mutation in Mouse G Bertrand and B Benzon—p 449
Filtrability of Tubercle Bacillus J Valtis—p 453
*Treatment of Trypanosomiasis Blanchard and J Laigret—p 460
Blood Parasites in Italian Birds G Franchini—p 470
Preservation of Microbes C Truche—p 516
Rapid Method for Negri Bodies S Andriani—p 520
*Epidemic Spirochetosis in Dogs J Lukes (Brno)—p 523

Treatment of Trypanosomiasis—Blanchard and Laigret treat trypanosomiasis in its first stage with six subcutaneous injections of atoxyl at two week intervals, giving 0.02 gm per kilogram of body weight. The results were excellent, especially with regard to the permanent removal of trypanosomes from the circulating blood. Intravenous injections of tartar emetic between the atoxyl treatment aided the results. Less intensive—so called prophylactic treatment—does not help in the first stage and is dangerous in the second (over 50 cells per cmm of spinal fluid).

Epidemic Spirochetosis in Dogs—Lukes investigated an epidemic of ulcerative stomatitis and hemorrhagic gastroenteritis in dogs. He found spirochetes in the kidneys of a large majority of these dogs. The disease may be transmitted to guinea-pigs. The germs, which he calls *Spirochaeta melanogenes-canis*, grew in serum. The disease may belong to the group of infectious jaundice.

Archives de Medecine des Enfants, Paris

27 321 384 (June) 1924

- Congenital Stenosis of Duodenum M Pehu and A Auberge—p 321
Conc n p 398
Edema of New Born P Gautier—p 342
Congenital Obliteration of Esophagus A Vaz—p 347
Tay Sachs Disease. J Comby—p 349

27 385 448 (July) 1924

- *Hospital Epidemic of Scarlet Fever Renault and Kourilsky—p 385

Hospital Epidemic of Scarlet Fever—Renault and Kourilsky describe an epidemic of scarlet fever in a children's hospital. The infection spread rapidly in the common wards. The disease was not transmitted in the wards which were provided with cubicles.

Comptes Rendus de la Société de Biologie, Paris

91 141 236 (June 27) 1924 Partial Index

- *Botulinus Anatoxin M Weinberg and P Goy—p 148
*Chloroform and Epinephrin E Bardier and A Stillmunkes—p 157
*Hypercholesterolemia with Suprarenal Tumor R Yovanovitch—p 158
*Treatment of Bilharziasis M Petzetakis—p 159
*Induced Lymphocytosis in Cancer Cases Loeper and Turpin—p 164
*Allergy in Diphtheria C Zoeller—p 165
*Nocturnal Visual Acuity in Man J Beyne and G Worms—p 178
*Blood Calcium in the Tuberculous A Looft—p 190
*Low Blood Calcium with Diarrhea L Blum and A Looft—p 194
*Idem in Various Pathologic Conditions Tschember—p 195
*Perlingual Application of Insulin L Blum—p 199
*Blood Pressure in Operations R Simon and R Fontaine—p 201
*Scurvy and Tuberculosis G Mouriquand et al—p 205
*Action on Anaphylaxis of Absence of Vitamin C M Zolog—p 215
*Congenital Malaria L de Castro Freire—p 219
*The Schick Reaction F d'Assis Brito Filho—p 230
*Alleged Antagonism of Gonads M Athias—p 232

Botulinus Anatoxin—Weinberg and Goy's experiments showed that immunization of animals is easily induced through injection of botulinus antitoxin long acted on by formaldehyd solution. The immunity is pronounced, the blood serum flocculates in presence of a corresponding toxin, and the antitoxic power is high. But the action of the formaldehyd decreases the duration of the immunity.

Mutual Action of Chloroform and Epinephrin—Bardier and Stillmunkes recall that an intravenous injection of epinephrin causes syncope in a dog under chloroform. Shock from hemorrhage prevents the syncope. The syncope is evidently of toxic origin, due to the reinforcing of the toxicity of the chloroform by the epinephrin. A normal functioning of the nervous system of the heart and the vessels seems to be indispensable for the occurrence of the syncope.

Suprarenals as Factor in High Cholesterolemia—Yovanovitch's research on a suprarenal adenoma has confirmed the opinion that the suprarenal cortex controls the cholesterol content of the blood. He compares the amount of cholesterol in the adenoma in which a hyperfunctioning of glandular

tissue was manifest (25.80 to 164 gm per 1,000 gm), with the amount in the surrounding, nonhyperplastic tissue (12.93 to 52.50 gm in 1,000 gm). The cholesterol is not deposited in the suprarenal tissue, but is produced by its cells and parallels their function.

Bilharziasis Treatment by Calcium Chlorid—Petzetakis injects from 0.5 to 1 gm of a 10 per cent solution of calcium chlorid, at first every day, then every second day, to a total of twenty injections. He had excellent results in recent cases with slight cystitis, and living ova in the urine, but was less successful in advanced cases.

Influence of Lymphopoiesis on Sarcoma—Loeper and Turpin implanted in rats grafts of mouse carcinoma and mouse testes to produce lymphocytosis. The lymphocytosis did not seem to exert any protective action against cancer invasion.

Diphtheria-Anatoxin Test—Zoeller calls attention to the fact that tests with Ramon's diphtheria anatoxin may be positive in cases in which the Schick test is negative, and inversely. A positive anatoxin reaction is a phase between the extremes of virgin soil and total immunity.

Calcemia in Pulmonary Tuberculosis—Looft declares that, contrary to the prevalent opinion, there is no reduction of calcium in the blood of the tuberculous, except in those with diarrhea. His research showed that in benign or moderately grave cases the amount of calcium is above the normal standard. In grave conditions it is usually normal.

Hypocalcemia in Diarrhea—Blum and Looft found a considerable reduction of the blood calcium in the tuberculous with diarrhea, a rather slight decrease in dysentery and a normal amount in acute enteritis. They assume that the hypocalcemia in a chronic diarrhea is produced by the exaggerated elimination. Logically, calcium therapy is indicated in these cases, especially in the tuberculous with diarrhea.

Administration of Insulin by the Tongue—Blum's opinion is that the administration of insulin by spreading it on the tongue is as efficient as by injection. Insulin, in the dose of 10 mg spread on the tongue, reduced in three hours in one nondiabetic subject the amount of sugar in the blood from 0.085 per cent to 0.062, and in another from 0.180 to 0.095. The dose has to be several times larger than by injection.

Variations in Arterial Pressure During Laparotomies—Simon and Fontaine relate that in laparotomies under a local anesthetic the opening of the abdominal wall is accompanied by a transient hypertension, soon followed by a drop in the pressure and amplitude of the pulse. General ether anesthesia causes the same effect but the consecutive decrease of the pressure is less pronounced. They ascribe the decrease of pressure to the painful traction on nerves. In a case of gastro-enterostomy in which all traction had been avoided, the decrease was hardly noticeable. Blocking the gastric nerves in the rabbit prevented fluctuations in the blood pressure in operations on the stomach, and they advise in the clinic that an anesthetic should be injected into the mesentery in addition to the local parietal or the general anesthesia.

Reciprocal Action of Scurvy and Tuberculosis—Mouriquand, Rochaix and Michel's experiments on guinea-pigs proved that the presence of tuberculosis has no influence on the appearance and development of acute or chronic scurvy, but the development of tuberculosis later is more rapid in a phase of vitamin deficiency. Guinea-pigs submitted to a prolonged vitamin C deficiency diet (142 days) manifested a marked resistance to the tubercle bacillus during the first three weeks. After this phase the disease progressed rapidly, especially in the lungs. It may be possible to create experimentally in the organism conditions predisposing to a different form of infection with the same bacilli.

Congenital Malaria—In Castro Freire's case the mother contracted malaria near term. At 6 weeks of age the infant presented, among other signs of malaria enlargement of the spleen. Intensive treatment with quinin and arsphenamin was followed by complete recovery.

Research on Schick Test—Assis Brito Filho noted the most frequent occurring of a positive Schick test in children from 2 to 6 years of age. The Schick test made in thirty-six cases

of diphtheria from half an hour to twenty-four hours after the injection of diphtheria antitoxin, proved to be positive in 58.3 per cent. The test given in twenty-three cases before injection showed positive reaction in 95.7 per cent.

91 237 324 (July 4) 1924 Partial Index

- Tetanus Antitoxin P. Descombey—p. 239
- *Survival of Spirochetes in Bedbugs C. Bonne—p. 242
- *Nonspecific Immunity L. Kepinov—p. 244
- *Glycolysis and Blood Phosphorus Bierry and Moquet—p. 250
- *Tubercle Bacilli and Magnesium Sulphate L. H. Manceaux—p. 255
- *Tuberculin Tests After Operations Decressac and Jacquelin—p. 272
- *Mechanism of Muscular Contracture A. Schwartz and A. Oschmann—p. 275
- Influence of Sunlight on Appearance of Spontaneous Tumors in Mice A. de Coulon—p. 280
- *Carbohydrates in Potatoes F. Schmid—p. 287
- *Hyperglycemia Checks Insulin Secretion M. Arnovlyevitch—p. 287
- *Epinephrin and Urea Content of Blood Dubois and Polonovski—p. 293
- Retrosternal Adipose Body (Thymus) Olivier and Batuille—p. 295
- Complement Fixation in Diagnosis of Typhoid Vogelien and Gernez—p. 297
- Production of Hemolysins Through the Epidermis C. Gernez—p. 299
- *Intradermal Reaction to Enterococcus Gernez and Razemon—p. 301
- *Mishaps in Vaccine Production in Rabbits Huon and Placidi—p. 308
- Passage of Bismuth into Cerebrospinal Fluid Olmer et al.—p. 310
- *Effects on Toads of Removal of Pituitary Giusti and Houssay—p. 313

Transmission of Spirochetosis by Bedbugs—The research on guinea-pigs reported apparently demonstrates that *Spirochaeta icterohemorrhagiae* can retain its virulence in the bedbug for two days at least.

Nonspecific Immunity—Kepinov announces that filtrates of the prodigiosus and the proteus protect guinea-pigs against lethal doses of cholera vibrios more effectually than vaccines made from the cholera vibrios themselves. Experiments with milk and albumose were negative.

Glycolysis and Phosphorus in the Blood—The variations in the inorganic phosphorus in defibrinated blood during physiologic glycolysis seem to indicate that the glucose takes the form of phosphoric hexose in the blood corpuscles before becoming transformed into d-lactic acid.

Tubercle Bacilli and Magnesium Sulphate—Manceaux added the magnesium sulphate to a potato medium and found that the tubercle bacilli (bovine) thrived on it up to a concentration of 20 per cent, and even at 30 per cent the cultures never failed to infect guinea-pigs.

Tuberculin Tests After Operations—Decressac and Jacquelin obtained only 73 per cent positive reactions in eighty-six patients after operations. They ascribe this to postoperative anergy, most pronounced after ether.

Mechanism of Muscular Contractions—The free phosphoric acid in the contracted muscles of frogs poisoned with monobromacetic acid is not increased, but keeps below the normal range.

The Carbohydrate Content of Potatoes—The carbohydrate content may vary by 38 per cent between old and new potatoes, the latter having the least.

Inhibiting Action of Hyperglycemia on Secretion of Insulin—Arnovlyevitch maintains his contention that with equal glycemia the combustions are equal, given equal insulinemia. This is confirmed anew by the reduction in the insulinemia in animals he injected with glucose, compared with those injected with insulin alone.

Influence of Epinephrin on Urea in Blood—In dogs and rabbits, injection of epinephrin increased the urea content of the blood, testifying to augmented production of urea. Glycosuria was noted at the same time. The epinephrin seems to act in the same way on both the glycogen producing and urea producing functions.

Intradermal Enterococcus Vaccine Test—The test was positive in eleven of sixty subjects tested, while complement fixation was variable in this group. The immunization may be effectual and yet the production of antibodies may not be intense enough to induce complement fixation.

Generalized Vaccinia in Rabbits—The rabbits were those used in production of vaccine. Rabbits are evidently unusually susceptible to a slight increase in the area scarified or increase in the concentration. Huon and Placidi never had such accidents in the 1,450 calves and 550 asses treated proportionately.

Effects of Removal of the Pituitary—Giusti and Houssay noted regularly in toads, after entire removal of the pituitary, black pigmentation of the cuticle, intense atrophy of the testes, and frequently abortion in gravid females. After mere puncture of the infundibulum-tuber region, there was no pigmentation and no atrophy of the testes.

Encephale, Paris

19 337 408 (June) 1924

- Concussion of the Spine Andre Thomas—p. 337
- Unconscious Organization of Memories Claude and de Saussure—p. 360
- Obsession of Being Influenced A. Ceillier—p. 370
- Conc. n
- *Alzheimer's Disease C. I. Urechia and C. Danetz—p. 382

Alzheimer's Disease—Urechia and Danetz add a new case, with necropsy, to the sixty on record to date. Nothing abnormal could be noted in the woman's antecedents. The disease started at the age of 37 with progressive amnesia and apathy. Lumbar puncture was negative.

Lyon Chirurgial

21 257 396 (June) 1924

- *The Digital Glomus P. Masson—p. 257
- *Operative Injury of Bile Ducts Zabala and Bengolea—p. 281
- *Hernia of Appendices Epiploicae M. Patel and P. Mallet Guy—p. 287
- Early Suprapubic Cystostomy in Injury of Spinal Cord Wertheimer—p. 309

The Glomus of Tactile Regions—Masson's attention was attracted to the neuromyo arterial glomus in the fingers by a pathologic condition in three cases, manifested by a subungual tumor and pain. His research seems to show that it is an autochthonous organ which transmits to the arteries and capillaries nervous impulses which insure their optimal operation. Its function is somewhat analogous to that of the bundle of His. It includes the nerve ending of Ruffini.

Operative Injury of Bile Ducts—When the inflammatory process in the bile duct region has welded parts together so that it is almost impossible to remove the gallbladder without injuring the hepatic or common bile duct, Zabala and Bengolea open the gallbladder from the fundus down to the neck, instead of from the neck upward. They resect as much of the gallbladder as necessary, leaving adherent portions unmolested. If the cystic duct proves permeable, the operation can be continued as usual.

Hernia of Appendices Epiploicae—Patel and Guy summarize thirty cases from the records and their own experience, emphasizing that in resection it is important to sever the pedicle close to the intestine and turn in the stump. This wards off danger of a diverticulum.

Schweizerische medizinische Wochenschrift, Basel

54 605 624 (July 3) 1924

- *Cancer and Endemic Goiter O. Stiner—p. 605
- Spontaneous Perforation of Ovarian Cyst P. Meyer—p. 611
- Blood Transfusion L. Bischoff—p. 616
- Medicine in the United States F. Haeblerlin—p. 618

Cancer and Endemic Goiter—Stiner confirms a parallelism between the frequency of endemic goiter and cancer—especially of the digestive system—in various parts of Switzerland. He attributes both conditions, to a large extent, to improper food which causes the first directly, the other indirectly by injuring the teeth. Iodin prevention of goiter, alone, will not decrease the frequency of cancer.

54: 649 668 (July 17) 1924

- *Pathogenesis of Sterilet Infection M. Walthard—p. 649
- *Dangers of Birth Control by Obturators A. Reist—p. 650
- *Modern Conception of Predisposition Hanhart—p. 659
- Conc. n, p. 680

Pathogenesis of "Sterilet" Infection—Walthard finds that the intra-uterine rods ("sterilets") used for birth control necessarily cause an infection which is in many instances ascending. The greatest danger is during menstruation. The frequency of sepsis and grave suppurations in the internal genital organs has much increased since this apparatus became popular. He advocates legal prohibition of its sale.

Dangers of Birth Control by Obturators—Reist observed within a short period seven instances of grave affections of the uterus and adnexa, with two deaths. All were due to the use of intra-uterine pessaries with a long stem, forming a

spring He also observed an instance of injury from Nissauer's "fructulet", this is an intra-uterine tube designed to facilitate conception Every woman who wears a mechanical intra-uterine device of these kinds becomes infected sooner or later He has compiled from the literature and his own observation seventeen cases of death, sixty-two of septic abortion and four of extra-uterine pregnancy from conceptions occurring in spite of the intra-uterine device

Pediatrics, Naples

32 761 816 (July 1) 1924

- Leukocytosis in Whooping Cough O Cozzolino—p 761
- Intradermal Reaction in Measles S De Villa—p 769
- Experimental Measles A Laurinsich—p 772
- Agent of Measles in Pharynx and in Koplik's Spots Vitelli—p 781
- Antibodies in Measles P Ritossa—p 784
- Aplasia of Muscles A De Capite—p 789
- Leishmaniasis in Liguria L Sabatini—p 794

Intradermal Reaction in Measles—Villa gave intracutaneous injections of killed cultures of Caronia's alleged agent of measles The reaction was negative in 52 patients in all stages (including prodromal) of the disease, in 24 children vaccinated with the cultures, and in 18 out of 24 children who had had measles before It was positive in 15 out of 22 with a negative history of measles

Antibodies in Measles—Ritossa found an agglutinin, an opsonin and an amboceptor for Caronia's microbe in the serum of patients with measles The immune reaction appears in the first days of the disease, increases in strength and is still present after recovery

32 817 880 (July 15) 1924

- Etiology of Hydrophobia G Caronia and M B Sindoni—p 817
- Tuberculous Meningitis S De Villa and G Genese—p 824
- Respiratory Capacity R Kharina Marinucci—p 832
- Mastoid Adenitis C Giaume—p 850
- Blood Grouping in Infants R Pollitzer and S Rapisardi—p 858
- Diagnosis of Pott's Disease in Children M Mitra—p 862

Etiology of Hydrophobia—Caronia and Sindoni inoculated fixed virus on the Tarozzi-Noguchi medium and incubated it under liquid petrolatum They observed a very slow development of extremely minute gram-positive cocci Similar cocci were found in the brain of a child who died from hydrophobia, and of rabbits killed at the beginning of the paralytic stage Intracranial inoculation of a rabbit with the sixth generation of the culture caused paralysis and death after thirty-eight days

Respiratory Capacity and Sitting Height—Kharina-Marinucci compared the sitting height and the respiratory capacity in 960 children She found constant proportions in normal subjects and important variations in disease

Mastoid Adenitis—Giaume has noted enlargement of the retromastoid glands very frequently in children

Blood Grouping in Infants—Pollitzer and Rapisardi saw no noticeable agglutination of the mother's erythrocytes by the serum of the infant in fifty cases tested The mother's serum may agglutinate the infant's corpuscles

Policlinico, Rome

31 867 900 (July 7) 1924

- Typhoid Vaccination by Mouth G Brotzu—p 867
- Incarceration of Pregnant Uterus L Tomasi—p 870
- Postpartum Suppuration of Symphysis E Zoli—p 871
- Focus of Endemic Goiter in Sardinia P Ottonello—p 873
- Cystoscopic Diagnosis of Renal Calculi F De Meo—p 875

31 901 931 (July 14) 1924

- Hemolytic Action of Mercuric Iodid O Sciarra—p 901
- Surgical Treatment of Elephantiasis G Samorini—p 904
- Masturbation in Infants T M Balboni—p 908

Hemolytic Action of Mercuric Iodid—Sciarra found that addition of one drop of a 0.5 per cent solution of mercuric iodid hemolyzes 1 cc of a suspension of erythrocytes, and causes therefore a negative Wassermann reaction If it is injected in animals, the serum also becomes negative

Masturbation in Infants—Balboni reports on two male infants with distinct masturbating practices (friction against the mother, but, in one of the infants, not with other persons) at the age of about 1 year

31 933 963 (July 21) 1924

- Induced Anisocoria in Tuberculosis R Carusi—p 933
- Treatment of Encephalitis with Neo-Arsphenamin C Agostini—p 938
- Rapid Reproduction of Hydrothorax G Galli—p 938
- Fork Shaped Vial A Sacchetti—p 941

Artificially Induced Anisocoria in Tuberculosis—Carusi had fair diagnostic results with the instillation of 4 per cent cocaine into the conjunctival sac in beginning tuberculosis of the apex In the majority of the patients, the pupil on the affected side dilated within ten or fifteen minutes more than the other pupil

Rapid Reproduction of a Hydrothorax in a Syphilitic—Galli reports the case of a syphilitic with cor bovinum and aortic aneurysm There was recurring pleural effusion which returned so rapidly that the patient had to be tapped twenty-nine times within seventy-eight days The total liquid withdrawn amounted to 51 liters

Riforma Medica, Naples

40 625 648 (July 7) 1924

- Hypofibrinous Blood Crasis M Stanzani—p 625
- Fracture of the Pelvis O Nuzzi—p 626
- Obstetrical Rupture of the Uterus A Caucci—p 631
- Disinfection of Syringes C Pacelli—p 633
- Treatment of Enuresis F Viola—p 633

Treatment of Enuresis—Viola prefers epidural injections of physiologic solution of sodium chlorid to every other treatment of enuresis

Deutsches Archiv für klinische Medizin, Leipzig

144 177 320 (June) 1924

- Death from Iodin Hyperthyroidism O Roth—p 177
- Metabolism in Infectious Endocarditis H Gessler—p 188
- Micro-Observations on Sweating I E Jürgensen—p 193 II—p 248
- Cholesterolemia in Gangrene N A Ssokoloff—p 202
- Kidney Function in Hypertension O Klein—p 207
- Cancer and Tuberculosis in the Lung G Giegler—p 223
- Prolonged PR Interval H Deist—p 227
- Registration of Breathing Raffauf and Engelhard—p 237
- Styptic Action of Opium G Ganter—p 258
- Respiration in Emphysema A Engelhard—p 271
- Aleukemic Myelosis P Szilard—p 286
- Syphilis and Grave Anemia F Hoff—p 297

Death from Iodin Hyperthyroidism—Roth reports the history and necropsy findings on a girl, aged 21, who had received 9 gm of potassium iodid within four weeks in treatment of colloid goiter The patient developed symptoms of toxic goiter within fourteen days after the beginning of the treatment, and died two and one-half months later A thymicolymphatic state and hypoplasia of the heart and blood vessels acted perhaps as a predisposing cause

Metabolism in Infectious Endocarditis—Gessler determined the basal metabolism in seven patients with chronic infectious endocarditis It was increased (up to 43 per cent) even in the periods with normal temperature

Cholesterolemia in Gangrene—Ssokoloff found approximately normal figures of blood cholesterol in patients with spontaneous gangrene of the extremities Extirpation of a suprarenal capsule did not change it distinctly

Kidney Function in Hypertension—Klein examined the kidney function in 136 patients with permanent hypertension At least one half of them showed some impairment He believes that the so-called benign form is a precursor of the malignant sclerosis Every patient with hypertension is on his way into this stage

Prolonged PR Interval—Deist emphasizes the significance of a prolonged PR interval in alleged functional disturbances of the heart It indicates an affection of the heart muscle in the region of His' bundle

Aleukemic Myelosis—Szilard incubated leukocytes from two patients with aleukemic myelosis in their own serum and in the serum from healthy persons The number of these cells diminished more than the number of leukocytes from typical myelogenous leukemia He believes that this increased fragility is the only reason for the low leukocyte counts in such conditions

Syphilis and Grave Anemia—Hoff reports six cases of pernicious anemia in syphilitics He recommends specific treatment for every patient with apparently cryptogenetic anemia, without regard to the Wassermann test

Deutsche medizinische Wochenschrift, Leipzig

50 941 974 (July 11) 1924

- *Avoiding Operations in Diphtheria A Schlossmann—p 941
- Modern Eyeglasses H Erggelet—p 944 Conc n p 980
- Treatment of Cataract W Unthoff—p 946 Cont d
- *Trichinosis in Karlsruhe F Heissen—p 948
- Secretin from Spinach M Dobreff—p 950
- *Sedimentation Speed of Sensitized Corpuscles Spitzer—p 950
- Castration in Hysteria A Kutzinski—p 951
- Hypnosis from Scientific Standpoint G Hltau—p 952
- Mechanical Percussion E Bock—p 953
- Progressive Suppurations in Head Region A Harf—p 953
- Drip Enema in Puerperal Fever A Wagner—p 954
- Implantation in Lacrimal Ducts F F Krusius—p 954
- Mineral Metabolism and Ion Treatment Starkenstein—p 955 Conc n
- *A Source of Lead Poisoning Beintker—p 958
- Hygiene of Drifting Labor E G Dresel and C Grabe—p 959
- Examination for Medical Degree Munzel—p 961
- The Title of "Dr." J Schwalbe—p 962
- Report on a Bladder Calculus from 1777 H J Peppink—p 964
- Radio Control of Fetal Sounds Neubauer—p 965

Avoiding Tracheotomy and Intubation in Diphtheria—The frequent deaths after tracheotomy and intubations compelled Schlossmann to try to avoid them as much as possible. Man requires much less air than we think, especially when resting. Therefore the main effort should be directed to procure with narcotics a rest for the child during the twelve or more hours before the antitoxin begins to work. The window should be open and the cooler the air the better for the child, who should be well covered and warmed with bottles. The prognosis of his patients improved with the avoiding of tracheotomy or intubation except in the gravest cases.

Trichinosis in Karlsruhe—Heissen describes an epidemic of about 150 cases of trichinosis. Eosinophilia between 18 and 52 per cent was the most constant sign, it had no relation to the severity of the disease. The highest figure was obtained in a clinically latent case. Edema of the eyelids was next in frequency. The incubation was between twelve hours and six days. Only one patient died, from acute gastro enteritis.

Sedimentation Speed of Sensitized Corpuscles—Spitzer found no differences between the sedimentation speed of erythrocytes sensitized with hemolysins and those treated with normal serum.

A Source of Lead Poisoning—Beintker observed lead poisoning in a plant for hardening of wires. The steel wires are heated to 800 C. and cooled in a lead bath of about 500 C.

Klinische Wochenschrift, Berlin

3 1249 1296 (July 8) 1924

- Fundamentals of Norm and Constitution Kaup—p 1249 Cont'd
- Function of the Cerebellum K Goldstein—p 1255
- Optic Tract and Optic Center F Krause—p 1260
- *Action of Epinephrin by Mouth B Aschner and H Pisk—p 1265
- *In Vitro Strain of Sarcoma A Fischer—p 1267
- *Lime-Arsphenamin Treatment F Jacobsohn and Sklarz—p 1267
- Cerebrospinal Fluid in Children K Waltner—p 1271
- Standardization of Insulin E Laqueur—p 1272
- Reply T Depisch et al—p 1272
- Action of Opium Alkaloids on Bowel J J Pal—p 1272
- Reply G Ganter—p 1272
- *Intratracheal Administration of Insulin E Laqueur and A Grevenstuk—p 1273
- *Elimination of Water with Various Salt and H Ion Content E Starkenstein—p 1274
- *Sudden Death After Intravenous Injection of Bismuth Magnus—p 1275
- Calcium Treatment K Bluhdorn—p 1276
- *So-Called Vanilla Poisoning A Gersbach—p 1278

Function of the Cerebellum—Goldstein denies the coordinating function of the cerebellum. He believes that neither the balance nor the direction depends on it. Barany's post-pointing reaction is practically always directed outward, which indicates the direction of primitive automatisms checked normally by the cerebral impulses which are only strengthened by the cerebellum.

Action of Epinephrin by Mouth—Aschner and Pisk found an increase in blood pressure after ingestion of from 3 to 4 cc of a 0.1 per cent solution of epinephrin. The blood sugar was not increased. The test frequently produces pains and vomiting especially in ulcer patients. The authors prefer the subcutaneous injection.

In Vitro Strain of Sarcoma—Fischer made eighty-four passages of a Peyton Rous chicken sarcoma in vitro. He

obtained this result by adding a piece of muscle to the cultures. The sarcoma cells which would otherwise peptolyze the plasma, invade the muscle rapidly, grow and keep their virulence.

Lime-Arsphenamin Treatment—Jacobsohn and Sklarz produced a lethal shock in guinea-pigs with a combination of otherwise innocuous doses of arsphenamin and potassium. Calcium prevented the death. In arsphenamin-intolerant patients, neo-arsphenamin may be injected in 5 cc of a 10 per cent solution of calcium chlorid.

Intratracheal Administration of Insulin—Laqueur and Grevenstuk injected insulin into the trachea of rabbits. The effect was the same as with subcutaneous injections.

Elimination of Water with Various Salt and H Ion Content—Starkenstein attributes the diuretic action of water containing carbon dioxide to its hydrogen ion concentration, but not to a faster resorption from the stomach, as others assume. It produces a better diuresis even when injected intravenously. The effect of the oral ingestion may be due in part to the stimulation of acid gastric secretion.

Sudden Death After Intravenous Injection of Bismuth—Magnus' patient was treated for recently acquired syphilis with eight injections of 0.6 gm of neo arsphenamin. After this he received intravenous injections of a bismuth preparation. He collapsed suddenly and died, after the sixth injection.

So-Called Vanilla Poisoning—Gersbach confirms Wassermann's findings on the favorable influence of low (0.02 per cent) concentrations of vanillin on the growth of anaerobes. No effect was noted with paratyphoid bacilli. He believes that the so called vanilla intoxications, especially with ice cream, are due simply to paratyphoid infection transmitted in the rich basis of the food.

3 1297 1344 (July 15) 1924

- Norms and Constitution J Kaup—p 1297 Conc n
- *Pathogenesis of Scarlet Fever M H Kuczynski—p 1303
- *Predisposition in Infectious Diseases Hirszfild et al—p 1308
- *Trousseau's Phenomenon H Behrendt and H Klonk—p 1311
- *Treatment of Wounds with Blood Plasma R Vogel—p 1313
- *Diabetes Refractory to Insulin W Falta—p 1315
- *Cutaneous Diphtheria Test K Kassowitz—p 1317
- Urobilinometer G Tutzer and A Adler—p 1318
- *Sugar Metabolism in Menstruation Frey—p 1319 Reply Heilig—p 1320
- *Experimental Sympathicotonia Wohlgemuth and Mochizuki—p 1320
- Salt Test in Colloid Reactions W Schmitt—p 1322
- Modification of Hemolysin Reaction T Gruschka—p 1322
- *Arm Tonus in Cerebellar Affections K Heilmann—p 1323
- *Leukorrhea and Its Treatment R Salomon—p 1324
- Research on Heredity Jollos—p 1327 Conc n, p 1369

Pathogenesis of Scarlet Fever—Kuczynski examined in Siberia three scarlet fever patients who died in the acute stage. Streptococci were found in their organs. He believes that thrombosis of the capillaries is the basis of the ischemia of the glomeruli. The lesions in the tubules resemble those of mercuric chlorid poisoning. The interstitial infiltration in the kidneys and the periportal infiltrations in the liver contained no streptococci. He believes that all these changes as well as the eruption are due to the action of a poison. Rabbits tolerated comparatively large doses of the streptococci. Eosinophils were always found in these animals during the fever. Liver infiltrates contained eosinophils, and the kidney changes corresponded to those in man. He believes that a true specific streptococcus toxin may be the cause of the changes, since the disease is followed by immunity against scarlet fever but not against streptococcus tonsillitis.

Heredity and Predisposition in Infectious Diseases—H and L Hirszfild and Brokman made the Schick test in fifty families (both parents in forty two) with 105 children. The blood groups were previously determined. They found that in this small material a predisposition was present in the children whose blood group was identical with that of a predisposed parent. Every blood character may carry with it immunity or predisposition. They believe that there is an immunobiologic inferiority of susceptible children from susceptible parents when compared with the predisposition of susceptible children from immune parents.

Trousseau's Phenomenon—Behrendt and Klönk attribute Trousseau's phenomenon to the pressure on the tonus nerve fibers and to the locally lowered calcium ion concentration in the blood. Deficiency in oxygen may be an additional factor.

Treatment of Wounds with Blood Plasma—Vogel uses citrated plasma, from man and cattle, for hemostasis in wounds. He mixes 100 cc of blood with 85 cc of a 2 per cent solution of sodium citrate and centrifugates it. Addition of 5 per cent by volume of a 45 per cent solution of calcium chloride induces coagulation of the plasma within two minutes when it is heated to 38 C. He had good results in prostatectomies (instead of using tampons), gallbladder operations and plastic operations.

Diabetes Refractory to Insulin—Falta reports on a case of diabetes which was practically refractory to insulin. Intravenous injections were followed by an increase in blood sugar after a slight and short lowering. The patient was corpulent. The sella turcica was small and the basal metabolism minus 17 per cent. The author believes that the patient has sufficient insulin but that it is prevented from action.

Cutaneous Diphtheria Test—Kassowitz made in 182 children parallel Schick and skin tests with concentrated diphtheria toxin, using Pirquet's instrument. The readings after forty-eight hours were practically identical with both techniques. He recommends the cutaneous method for examination of larger numbers of children. Schick made his first tests with it, but abandoned it later for the supposedly more exact intracutaneous injection.

"Sugar Metabolism in Menstruation"—Frey observed at the height of a labor pain an increase in blood sugar amounting to 20 or 30 per cent of its level in the interval. Irritation of the uterine cervix always induces hyperglycemia. The menstrual blood acts in a similar way, and this stimulation of the visceral nervous system is increased by ingestion of glucose. Consequently alimentary hyperglycemia is more pronounced during menstruation.

Experimental Sympathicotonia—Wohlgenuth and Mochizuki produce a chronic sympathicotonia in rabbits by ligating the pancreatic duct. The condition develops in about three or four weeks. The blood sugar increases, the tolerance decreases, the pupil dilates after epinephrin, and pilocarpin lowers the blood sugar. The condition lasts for months and may develop into diabetes.

Arm Tonus in Cerebellar Affections—Hellmann recommends Wodak and Fischer's arm tonus reaction in diagnosis of cerebellar tumors. Vestibular stimuli cause a unilateral change in the sensation of gravity. This accounts for the lowering of one of the arms extended horizontally forward. The test should last as long as possible (fifteen minutes) or be repeated with short intervals of rest. The spontaneous reaction in Wodak's and the author's cases was not changed by vestibular stimuli.

Leukorrhea and Its Treatment—Salomon warns against attempts to disinfect the vagina by killing all the microbes. The noxious germs have to be suppressed by promoting the proliferation of the bacilli which condition a normal secretion. Daily douches with a liter of 0.5 per cent solution of lactic acid may lead to a normal secretion within eight to seventeen days. If this is not sufficient intravaginal injections of a few cubic centimeters of fresh milk may help. Chlorosis, asthma, pulmonary tuberculosis, diabetes and affections of the uterus and adnexa have to be looked for and treated.

Medizinische Klinik, Berlin

20 957 990 (July 13) 1924

- *Summer Heat and Young Infants. H. Rietschel—p. 957
- *Elimination of Germs. O. Huntemüller—p. 960
- Shock Treatment of Gastric Ulcer. G. Heller—p. 964
- Metabolism in Affections of Circulation. T. Kisch—p. 968
- *Action of Acrotothermae. A. Klug—p. 971
- *Inhalation Treatment of Tuberculosis. A. Moeller—p. 972
- Perception of Objects. M. Lowy—p. 975
- Recent Progress in Neurology. A. Stern—p. 979

Summer Heat and Young Infants—Rietschel discusses the pathogenesis of the summer disorder of young infants which was classically described by Rush. Sour milk is certainly

not the cause—in fact it is tolerated rather better than sterilized food. The physical action of heat is the main factor. It takes a few weeks before the walls of the houses are heated. Therefore, the increase in mortality follows the peak of the heat. Not only acute hyperthermic conditions resembling sunstroke but also, and more frequently, a chronic lowering of resistance occur in young infants kept dressed in overheated rooms. The relative immunity of breast-fed babies is due to the fact that they regulate the food intake, and to the comparatively low protein content of human milk. Artificially fed infants suffer from overfeeding with milk and with preparations with a marked specific dynamic action. Few mothers understand that a baby may cry on account of thirst without being hungry. Concentrated food is especially dangerous since it increases the exsiccation of the body. The child should be kept in the coolest room and given water to drink. Lukewarm baths or dressings are better than cold ones.

Elimination of Germs—Huntemüller incubates bile or tissues in alkaline bouillon. This increases the percentage of positive results. While colon bacilli are predominant in direct cultures from cases of cholecystitis, with his method he found staphylococci in more instances.

Metabolism in Affections of Circulation—Kisch noted an increased basal metabolism only in dyspneic patients with affections of the mitral valve. Aortic insufficiency causes as a rule an increase in metabolism which he attributes to the increased work of the hypertrophic heart. He believes that this accounts for only a fraction of the increased metabolism in essential hypertension. Dyspnea and endocrine influences may be contributing causes.

Action of Acrotothermae—Klug observed after six days, dilatation of the pupil with visual disturbances and headaches in persons who were diving and bathing daily for about thirty minutes in the natural warm spring water of Janske Lazne, which contains very little mineral substances. A boy who was bathing for more than an hour presented signs resembling atropin intoxication. Another patient suffered a relapse of glaucoma. He explains the action of the thermal water as an inhibition of the parasympathetic.

Inhalation Treatment of Tuberculosis—Moeller saw only negative results in patients sent by him for Wenninger's inhalation treatment. He would favor a law for the protection of the tuberculous against new remedies.

Monatsschrift für Kinderheilkunde, Leipzig

28 193 288 (June) 1924

- Bilocular Heart with Situs Inversus. O. Corsdres—p. 193
- Mongolian Blue Spot with Deformities. O. Bruch—p. 199
- Pleurisy Versus Abnormal Lobe of Lung. F. Ettig—p. 207
- *Hemolytic Jaundice in Children. Beck—p. 215
- *Fatal Aspiration of Food in Young Infants. R. Rühle—p. 223
- Physical Proportions of Growing Children. J. Feiser—p. 227
- *Pseudohepophilia. E. Breckhoff—p. 232
- *Adult's Blood in Prophylaxis of Measles. H. Gerlach—p. 236
- *Diathermy in Acute Spinal Paralysis. H. Picard—p. 242

Hemolytic Jaundice in Children—Beck describes a case in a male infant of 5 months. The family was healthy. The reaction to transfusion of 15 cc of citrated blood was so severe that this method had to be abandoned and only small amounts of blood were injected intramuscularly. After several periods of exacerbation the enlarged spleen was removed and the jaundice began to subside almost at once. In two weeks the erythrocytes had risen from 1,468,000 to 4,720,000 and the hemoglobin from 30 to 77 per cent. In two other patients, boys of 9 and 11, the hemolytic jaundice accompanied steeple skull. Seventeen cases of this association have been published. Two of the older boy's brothers and sisters had steeple skull and the blood showed distinct anisomicrocytosis but there was no jaundice or splenomegaly. The resistance quotient was 0.44 and 0.56.

Suffocation of Infant from Thick Gruel—Rühle reports three instances of aspiration pneumonia or direct suffocation of infants aged from 1 to 5 months for whom thick gruel had been ordered to combat pylorospasm, dysentery or prolapse of the rectum. Necropsy showed the pasty particles in

the trachea or lung. Fluids getting into the air passages seem to be coughed up more readily than thicker food.

Pseudohemophilia—Breckoff describes the later history of the boy, aged 9, whose case was published in 1920 as an instance of pseudohemophilia from lack of fibrinogen. After a four year remission the symptoms returned, the blood did not coagulate in the course of a week and the bleeding from a prick in the ear showed no signs of arrest in forty-eight hours. Four days after intravascular transfusion of 400 cc of blood the bleeding time was five minutes, time of coagulation, twenty five minutes, with hemoglobin 80 per cent. The tenth day the blood responded to various tests as within normal range, but by another week the blood did not coagulate in forty-eight hours, showing that the fibrinogen introduced in the transfused blood had been gradually digested. The bleeding time however, persisted normal during the six weeks of observation, and there were no further hemorrhages. He thinks we must accept some influence on the walls of the vessels in addition to the state of the blood itself as responsible for the symptoms suggesting hemophilia. An abscess in the gum seemed to have been responsible for the flaring up of the hemorrhagic tendency. In Opitz' case the flaring up followed vaccination.

Prophylaxis of Measles with Adults' Blood—Gerlach says that the results were disappointing from injection of defibrinated blood from adults in prophylaxis of measles unless the amount was 30 cc in infants 3 to 20 months old, older children required 40 cc. Only one developed measles in the group of fifteen infants treated with from 23 to 30 cc of the blood, and none of the three other children, with 40 cc of blood.

Diathermy in Treatment of Paralysis from Epidemic Poliomyelitis—Picard begins to apply diathermy as soon as the febrile stage is past. He applies it to the part of the spinal cord involved in fifteen minute sittings daily at first and then on alternate days for a two months course. It is based on the theoretical assumption that edema in the region is an important factor in the disturbances; this edema may subside under the diathermy while the latter stimulates the circulation throughout the region and may have a bactericidal action. The influence of the electric current may also aid in repair. He gives the details of thirty one cases thus treated with recovery of 66.6 per cent of the twenty-nine that completed the course. The Bordier-Bergamini method is quite different; this applies the diathermy only to the legs with roentgen exposures of the spine and has a record of only 28.6 per cent recoveries in the sixteen cases that have been published (mentioned in THE JOURNAL, Nov. 10, 1923 p. 1643).

Munchener medizinische Wochenschrift, Munich

71 931 970 (July 11) 1924

- * Postoperative Paralytic Ileus. A. Mayer —p. 931
- * Colloid Treatment. II. H. Bechhold —p. 932
- Treatment of Inflammations and Cancers. E. Andersen —p. 933
- Suboccipital Puncture in Epidemic Meningitis. A. Hartwich —p. 935
- * Myogenous Pains and Stiffness. A. Müller —p. 936
- The Iron Question. O. Baumgarten —p. 938
- * Prognosis of Pernicious Anemia. I. Zidek —p. 940
- * Pernicious Anemia from *Taenia Solium*. T. Dervis —p. 942
- Sodium Hydroxide Experiment in Mastic Test. K. Lenzberg —p. 942
- * Arphenamin Injuries. II. F. Maerz —p. 943
- Treatment of Acute Serous Peritonitis. H. Tichy —p. 944
- Oocoeal Cancer Mistaken for Ovarian Cyst. H. Pollack —p. 944
- Syringe for Intravenous Injections. M. and H. Rothschild —p. 945
- * Diagnosis of Meningitis. O. Herz —p. 946
- Twin Pathology. H. W. Siemens —p. 946
- Visomotor and Tropic Neuroses. H. Curschmann —p. 946
- Mother and Child Welfare Work in Ukraine. Feder —p. 949
- Birth Statistics. E. Maurer —p. 950
- Medical Certificates for Candidates and for Pensions. Mayr —p. 951
- Medical Tribunals of Honor. A. Stauder —p. 953
- * Diagnosis of Mammary Cancer. Steinthal —p. 954

Postoperative Paralytic Ileus—Mayer makes a slow intravenous infusion of from 500 to 1000 cc of physiologic sodium chlorid solution with from 4 to 8 cc of pituitary extract. The infusion may be given by the drip technic. The bowels soon moved in 70 per cent of his fifty-two cases. Nevertheless many of these patients died. He considers the 10 per cent of recoveries he saw as very good. If the bowels move after the infusion, mechanical ileus is improbable. Accord-

ing to the author, some surgeons use enterostomy in the treatment of ileus as freely as others use castor oil.

Colloid Treatment—Bechhold finds that none of the explanations of the therapeutic action of various colloids is correct. Leukocytosis is in no causal relation to the result.

Myogenous Pains and Stiffness—Müller sees in the increased tonus of the muscles the basis of pains and stiffness of the shoulder joint whether they are spontaneous or secondary to injuries. The hind muscles are easily felt in the axilla. The condition is combined with an irritation of the joint which may lead to arthritis deformans. The only safe treatment is early massage of the individual muscles as worked out by the author.

Prognosis of Pernicious Anemia—Zidek expects a relapse when a patient in the remission stage has increased amounts of urobilin in the stool. A normal or still lower consumption of oxygen by the erythrocytes is a favorable sign, even in fully developed pernicious anemia.

Pernicious Anemia from *Taenia Solium*—Dervis' patient recovered completely from hematologically typical pernicious anemia after expulsion of a tapeworm (*Taenia solium*).

Arphenamin Injuries—Maerz observed mild encephalitis in one out of five patients all injected with the same solution of neo-arphenamin. This occurred twice. The injured patients were receiving the third and fourth injection, respectively while the others were getting their tenth. He attributes the untoward effect to a too rapid involution of syphilitic processes on the cerebral vessels. If an abortive cure is not intended the first four injections should be small.

Diagnosis of Meningitis—Herz adds from 1 to 3 drops of a potassium hydroxid solution to the fresh cerebrospinal fluid and shakes the mixture. If there is a marked increase in the cell content, as in tuberculous meningitis, the fluid stays filled with air bubbles.

Diagnosis of Mammary Cancer—Steinthal has frequently noted minute depressions in the skin, resembling those of an orange, over a cancer of the breast. The arm has to be abducted if one wants to ascertain the mobility of the tumor on the pectoralis major. Then the arm should be adducted and the hand introduced under the muscle to palpate glands on the edge of the pectoralis minor. Not only the axilla but also the edge of the sternum on the opposite side and the intercostal spaces may contain metastases in lymph glands. Enlarged glands, however, are not always cancerous. Paget's disease of the nipple is due to cancer. Bleeding from the nipple is frequently an indication of it. Small abscesses with a hard wall are found sometimes in diabetic women. A diagnostic excision should be accompanied with microscopic examination and, in the event of positive findings immediate radical operation should be done.

Wiener klinische Wochenschrift, Vienna

37 685 708 (July 10) 1924

- Blunders in Diagnosis of Tuberculosis. M. Weinberger —p. 688
- Acidosis. L. Hess and J. Goldstein —p. 689
- Preservation of Serums for Blood Grouping. P. Moritsch and R. Neumüller —p. 691
- * Vagus Pressure Experiment. S. Erben —p. 692
- Receptivity of Reticulo-Endothelial Cells. E. Ledofsky —p. 694
- Röntgen Ulcers. O. Reimer —p. 696
- Surgical Treatment of Angina Ictericus. G. Hofer. Supplement pp. 1-12

Acidosis—Hess and Goldstein injected trypan blue in rabbits poisoned with acids. There were necrotic spots in the liver and the reticulo-endothelial cells failed to take up the particles of the vital stain.

Vagus Pressure Experiment—Erben explained in 1921 the phenomena following compression of the carotid region as results of compression of the jugular vein. A reflex action from increased pressure in the carotid was assumed in 1900 by Pagano and by Siciliano. The author is opposed to Hering's proposal to change the name of the vagus compression experiment to 'carotid pressure experiment'. The compression of the vein with the subsequent increase in intracranial pressure and accumulation of carbon dioxide in the brain would have to be excluded first.

Receptivity of Reticulo-Endothelial Cells—Ledofsky injected intravenously 20 cc of a 33 per cent solution of

lurum saccharatum in the last days of life of eight women. The reticulo endothelial cells took up various amounts of the iron compound, independently of the disease. The differences were due to pathologic changes in the various organs, thus confirming Eppinger's findings.

37 709 730 (July 17) 1924

- Theory of Parenteral Protein Treatment W Weichardt—p 709
Conc n p 712
Individual Treatment of Goiter F Kaspar—p 713
Tetany from Overbreathing W Schloss—p 717
Surgical Treatment of Gastric Ulcer H Finsterer—p 719
Increase in Tolerance After Insulin J Gudemann—p 721
Sedimentation Test in Tuberculosis A v Torday—p 723
Intravenous Bismuth Treatment F Mraz—p 724

Individual Treatment of Goiter—Kaspar had excellent results in treatment of parenchymatous goiters, especially in children, with extremely small amounts of potassium iodide. Doses of 1 to 4 mg per month, divided in daily doses, were sufficient. These amounts are too small to produce thyrotoxic symptoms.

Tetany from Overbreathing—Schloss produced attacks of tetany or some of its symptoms by forced respiration. When the persons were breathing oxygen without forced movements, the experiments were negative. He believes that the movements and not the excessive ventilation are the cause. He suggests that the work of the muscles frees phosphoric acid in them. This enters the circulation and produces tetany. He has observed slight signs of it in athletes after exertion.

Surgical Treatment of Gastric and Duodenal Ulcer—Finsterer reports on 300 cases of duodenal ulcer with resection of one third to one half of the stomach, without any subsequent jejunal ulcers. This he explains by the anacidity due to the extensive resection. The patient has only slight discomfort in the first months from his small stomach if the anastomosis was sufficiently large and if there are no grave adhesions. It is doubtful whether the Billroth I anastomosis with its higher mortality will yield better results than the resection.

Increase in Tolerance After Insulin—Gudemann believes that the insulin treatment increased the carbohydrate tolerance of three of his patients. It seemed that it influenced unfavorably the development of pulmonary tuberculosis in two of them.

Zentralblatt fur Chirurgie, Leipzig

51 1495 1558 (July 12) 1924

- The Acutely Bleeding Gastric Ulcer F Erkes—p 1496
Gastroscope A Beck—p 1497
Own Blood in Furunculosis of Face W Linhart—p 1501
Double Test for Blood Grouping A Kubanyi—p 1503
Actively Movable Extension Splint A Winkelbauer—p 1504
Extension with Nonrusting Wire A Beck—p 1507
Surgical and After Treatment of Mastitis Felons and Phlegmons of Tendon Sheaths B Chatzkelsohn—p 1510
Picric Acid as Disinfectant A Rosenburg—p 1515

Treatment of the Acutely Bleeding Gastric Ulcer—Erkes ligated en masse the bleeding ulcer, inverted and sutured it in three cases of chronic recurring bleeding ulcers and in two of acutely bleeding ulcers. No further bleeding has occurred over a period of from one to three years. In nineteen other cases there was occult bleeding from ulcers of the stomach or duodenum. In only one case did postoperative bleeding of the ulcer occur and no ligature had been applied.

A Gastroscope—Beck describes a gastroscope of his own invention, which he finds of great service in inspecting the walls of the stomach and duodenum in the search for ulcers. Only a very small opening in the stomach is necessary to admit the tube of the instrument.

Own Blood in Treatment of Furunculosis—Linhart has applied in several cases of malignant furuncle on the face Læwen's method of injecting the patient's own blood in a circle around the area of the infection. He injected from 45 to 80 cc of blood from the ulnar vein. The infection was checked and the patients recovered rapidly.

51 1559 1606 (July 19) 1924

- Access to Tumor in Cranio Pharyngeal Canal Unger—p 1560
Ulnar Abduction as Sequel of Hand Phlegmon Schoening—p 1562

- Infraclavicular Blocking of Brachial Plexus Baleg—p 1563
Anesthesia in Children Dreesmann—p 1564
Suture Without Drainage After Cholecystectomy Bokastoff—p 1565
Own Blood Treatment of Infected Wounds Goljanitzki—p 1566
No Tamponing of Suppurating Wounds N Blumenthal—p 1569

An Aid in Inducing Anesthesia in Children—Dreesmann sprinkles on the mask a few drops of cologne. After a minute or two, he begins with the anesthetic. Almost without exception, the children remain calm and go under easily. He has applied the method also in dealing with timid or nervous adults, and, owing to the lack of the psychic shock, the whole course of the anesthesia was often quieter. The cologne may be used again during the anesthesia if the patient begins to rouse.

Own Blood Treatment of Infected Wounds—Goljanitzki emphasizes that in the healing of infected wounds an increased blood flow to the affected area plays an important part. The swelling of the tissues which accompanies regeneration, the break-down of the blood cells, and the infiltration of the tissues, all have a special significance in the regenerative process, while whole blood is the only antiseptic agent that has the capacity of destroying bacteria that have invaded the tissues, without killing the tissues themselves. On these principles Goljanitzki has built up his own blood treatment of infected wounds, counting on the cumulative effect of many infinitely small factors. He injects into the tissues about the wound and under the wound a 1:5 own blood solution, with the addition of 0.25 per cent procain and sodium chlorid up to the normal physiologic solution. During the course of a day or two he injects from 5 to 25 cc. This method he uses in all cases in which healing is proceeding too slowly.

Zentralblatt fur Gynakologie, Leipzig

48 1457 1504 (July 5) 1924

- Intra Uterine Use of Instruments H Sellheim—p 1458
Racial Differences in Constitution M Hirsch—p 1466
Ieritoneal and Genital Tuberculosis W Uter—p 1473
Treatment of Eclampsia and the Predisposition E. Essen Moller—p 1476
Menstrual Pains and Ovarian Dysmenorrhea J Novak—p 1476
Sedimentation Test in Gynecology and Obstetrics Falta—p 1478
Idem v Bronnikoff—p 1483
Cervical Pregnancy E Reinhardt—p 1490

Limits of Control by Sense of Feeling of Instruments in Uterus—Sellheim warns against the danger of overestimating the ability to tell from the feeling of curet or sound the condition of the uterus lining. In one of the several instructive cases he relates he had curetted the uterus four times without finding any explanation for the slight hemorrhage in the menopause. As he was drawing out the curet the last time a small polyp came with it, a carcinoma which had escaped detection during all the previous scrapings.

Peritoneal and Genital Tuberculosis—Uter declares that roentgen-ray treatment surpasses all others in the local and general improvement realized. It never causes fistulas, and, in the small doses used does not impair the genital functions. In his twenty-four cases all but three are completely cured, one of these is still under treatment and the two others are much improved. He gave four to six exposures beginning with one eighth to one twelfth of the skin dose, and reducing to only a sixteenth or forty-eighth.

Eclampsia—Essen-Moller relates that in four years of the Stroganoff prophylactic treatment systematically applied he has had a death rate of 20 per cent, and has now abandoned this method.

Sedimentation of Erythrocytes Test in Gynecology and Obstetrics—Falta tested more than 1,000 women, and found the speed always accelerated in pregnant women after the fourth month. The acceleration is extremely pronounced with impending abortion and in hemorrhagic endometritis after abortion, as well as with inflammatory processes in the adnexa, and with cancer.

Sedimentation Test—Bronnikoff uses the tube from a Sahli hemoglobinometer and records the depth of the plasma column at half hour intervals. It differentiates at a glance inflammatory processes from the noninflammatory, is a gauge of the intensity of the inflammation, and may reveal the presence

of unsuspected inflammation before an operation. The speed may persist accelerated for some time after the inflammation has healed.

48 1505 1568 (July 12) 1924

- Pernicious Anemia in Pregnancy K v Oettingen—p 1506
- Duodenal Stenosis from Tumor in New Born Infant Hohlbaum—p 1512
- *Bilirubin Metabolism in the New Born E Meyer and A Adler—p 1514
- *Urobilin in Excreta of the New Born Schulhoff and Adler—p 1520
- *The Kielland Forceps H Saenger—p 1532
- Perforation of Uterus by Dilating Instrument Hellendall—p 1535
- *Resuscitation of New Born in Asphyxia A Wagner—p 1538
- The Genital Trachoma Question Fischer and Jasch—p 1539
- Occult Intestinal Hemorrhage in Melena Neonatorum Von Raiss—p 1550
- Amenorrhea Complicating Atrophy of Uterus After Childbirth M Karlin—p 1554

Bilirubin Metabolism in the New-Born—Meyer and Adler accept an analogy between latent jaundice in the new-born and catarrhal jaundice later. The appearance of bilirubin in the urine and of granular erythrocytes in the blood testifies against hemolytic jaundice. The findings in fifty children are tabulated.

Urobilin in the Excreta of the New-Born—The figures and the course of events in seventy infants indicate that the presence of urobilin in the stools and urine is a sign of functional liver disturbance, an evidence of preparedness for jaundice.

The Kielland Forceps—Saenger remarks that in many of the cases that have been published as instances of Kielland forceps deliveries, the child should have been extracted by cesarean section. It is dangerous for the mother, for the child, and for the obstetrician to apply the Kielland forceps with the head still high in a contracted pelvis. But as forceps for the pelvic outlet it is easier to apply, and spares the mother and child better than the ordinary types of forceps.

Reanimation in Asphyxia Neonatorum—In commenting favorably on the baby pulmotor for insufflation of oxygen, Wagner quotes Vesalius' experiments on animals demonstrating the way in which the heart reacts at once to insufflation of air into the trachea. He kept animals alive for hours by insufflation with bellows, confirming the influence of insufflation on the heart by reflex action.

Casopis lekaruv ceskych, Prague

63 1033 1112 (July 12) 1924 Deyl Memorial Number

- *Development of Inferior Oblique Muscle O Leser—p 1034
- *Treatment of Glaucoma R Kadlicky—p 1035
- *Treatment of Secondary Cataract B Slavik—p 1041
- *Heterochromia of Iris J Janku—p 1043
- *Permeability of Conjunctiva for Tubercle Bacilli Z Bruckner—p 1053
- *Orbicular Phenomenon of Lens A Gala—p 1066
- Congenital Opacity of Cornea A Kreidlova—p 1070
- *Cataract in Eczema J Kurz—p 1072
- *Elephantiasis of Eyelids Z Moravec—p 1082
- Hemorrhages in Vitreous Body J Saska—p 1085
- Gistula Operation for Green Cataract E Vasek—p 1087
- Bismuth Treatment of Syphilis of Eye V Vojdovsky—p 1096
- Vesicles on Cornea A Sicha—p 1101

Development of Inferior Oblique Muscle—Leser found that in the embryonic development of mammals the inferior oblique muscle remains for a long time connected with the inferior rectus.

Treatment of Glaucoma—Kadlicky recommends Hamburger's subconjunctival injection of epinephrin on the day before the operation in glaucoma.

Treatment of Secondary Cataract—Slavik gives details of his technic of dissection of secondary cataracts. He had a series of 152 operations without tearing off Zinn's zone or having any other untoward result.

Heterochromia—Janku describes two cases of heterochromia of the iris. It is probable that they represent a peculiar very chronic, benign form of a military tuberculous eruption.

Permeability of Conjunctiva for Tubercle Bacilli—Bruckner produced a mild type of generalized tuberculous infection in guinea-pigs and rabbits by application of tubercle bacilli on the conjunctiva. The infection was slower in animals in which the lacrimal ducts were obstructed.

Orbicular Phenomenon of Lens—Gala observed in five senile cataracts movements of the opaque masses in the cortical part of the lens. He also publishes his observation on a peculiar phenomenon produced by the effort to close the eyes while the physician prevents the lids from closing. Besides the Bell and Westphal-Piltz phenomenon, the ciliary muscle contracts and relaxes the zone of Zinn. This causes a change of shape of the lens, with consecutive movements of the masses, described above. He calls it the orbicular phenomenon of the lens.

Cataract in Eczema—Kurz describes a case of posterior cortical cataract in a girl, aged 22, with recurrent eczema of hands and neck, for which she had been irradiated with roentgen rays. He believes that the parathyroids might have been injured.

Elephantiasis of Eyelids—Moravec observed a patient with elephantiasis of the lids, due to hereditary neurofibromatosis. There was also a dermoid of the orbit, and coloboma of retina and iris.

Finska Lakaresallskapetets Handlingar, Helsingfors

66 355 506 (June) 1924

- Tuberculosis of Bronchial Glands in Children W Pipping—p 355
- *The Tonsils in Acute Rheumatism O Holsti—p 365
- *Iodin Treatment of Hyperthyroidism J Wahlberg—p 385
- *Caisson Disease J C Sjoblom—p 398
- Research on Capillary Circulation E Hisinger Jagerskiöld—p 405
- Case of Primary Abdominal Pregnancy J Meyer—p 433
- Ophthalmologic Experience in Egypt E Enroth—p 457
- Predilection of Deliveries for Certain Hours Boije—p 465
- Etiology of Dyspepsia Preceding Tuberculosis Buch—p 468

Tuberculosis of Bronchial Glands in Children—Pipping reminds us that a glandular process is not inevitably tuberculous, and that slight fever may be due to some insignificant nasopharyngeal affection or to overexertion. With tuberculous bronchial glands in infants, there is often a peculiar metallic ring to the cough, and dyspnea in expiration.

Tonsils in Relation to Articular Rheumatism—Holsti found slight chronic inflammation in the tonsils of 8 presumably healthy persons killed in accidents. The tonsils were supposedly normal. In 43 cases of acute or chronic rheumatism, on the other hand ulceration or necrosis was manifest in two thirds of the tonsils and the others showed mild inflammatory processes. In 72 cases of death from some disease that had not involved the joints, the tonsils resembled those in the normal group. In the cardiovascular and acute infectious disease cases, the superficial inflammation was a little more pronounced than in the normal cases but still far less than in the articular rheumatism cases. There was a history of attacks of tonsillitis in 76.8 per cent of these latter cases, a recent attack was recorded in 71.4 per cent of the acute cases and in 47.3 per cent of the cases of recurring acute articular rheumatism. The tonsillitis persisted in some of the cases long after the subsidence of the joint affection. The data presented confirm, he declares, that ulcerative tonsillitis is a regular link in the chain of rheumatic disease.

Iodin Treatment of Hyperthyroidism—Wahlberg's treatment differs from the usual technics in that he uses only minute doses, never more than 0.04 gm of potassium iodid. He gave it most 15 drops a day of a 1:20 solution and all his nine patients thus treated materially improved and five can be regarded as cured. In the others the improvement was transient and in some the condition was graver at the close of treatment than before. He ascribes this to cumulative action from too long continuance of the optimal dose.

Caisson Disease—Sjoblom states that the divers' paralysis in one of the two cases he describes improved to such an extent that the man is able to walk on level ground, but tires readily. In the second case the spastic paralysis has persisted unmodified, the urine is infected and there is severe obstipation. The man was allowed 100 per cent workmen's compensation for life. Both were young robust men. In the first case the paralysis came on gradually in four hours after the worker had returned to the surface rather more rapidly than usual. Treatment was with potassium iodid hexamethylen-amin, massage and tepid baths, in less than a month he was walking with crutches.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL 83, No 9

CHICAGO, ILLINOIS

AUGUST 30, 1924

GRADUATE TEACHING OF UROLOGY*

HERMAN L KRETSCHMER, MD
CHICAGO

During the last few years, much has been said and written against the specialist in the practice of medicine, and most of this, curiously enough, has come from the medical profession. I take it that this agitation is directed against the pseudospecialists, the poorly equipped, badly trained men, practicing in the various medical and surgical specialties. Certainly no one would criticize the work of a specialist whose worth is unquestioned, who is the master of all the details of his chosen field, and combines his work in his field with a broad outlook on medicine as a whole. During the last twenty-five years, the practice of medicine has undergone greater changes than have characterized any previous period. These changes are, in part, a result of the ever-increasing discoveries in the fundamental sciences, and the many new developments in clinical medicine, as well as the result of advances in the problems of special diagnosis and special treatment. Because of these advances, a division of labor has necessarily resulted, and what is more natural than that, with the division of labor, the field of specialization should enlarge?

The tendency to specialization is not limited by any means to the practice of medicine. Specialization has been known and recognized in other professions, and in medicine it is not of recent date, though it must be admitted that the tendency today is stronger than it has been in the past. Commerce, economics and, for that matter, all professions, are showing in no mistakeable way that the trend is toward specialization. In the field of chemistry, for instance, we find many subdivisions of labor, both in chemical research and in industrial chemistry. If we turn to the activities in one of the other great professions, namely, the law, we find specialties in its practice, and, curiously enough, some of these specialties, like some of the specialties in medicine, are of recent origin, that is, they are the result of our present day environment as influenced by extrinsic factors. If we direct our attention to finance, we find that in the world of finance, too, specialization has crept in.

The training of specialists, whether in the field of internal medicine, in general surgery, or in the surgical specialties, must be considered from three broad and impartial points of view: (1) the improvement of the standard of medical service rendered to the patient, (2) the training and development of men who, after their training, will be in a position to render this high type of service to the sick, and (3) the stimulation of research

IMPROVEMENT OF STANDARDS

The failure to recognize that the patient has certain rights has undoubtedly led to some of the present day criticism of medical practice. In other words, patients have the right to expect the best medical service that it is possible for them to obtain. In order to gratify this justifiable expectation of a higher order of medical service, it devolves on us to develop, as the years go on, better and better medical men, whose training should come from within the profession, and not from without.

There are many extrinsic factors, which are influencing the practice of medicine today. For example, in a report at the annual meeting of the American Child Health Association, it was stated that "one of the most important services which the association can render is that of keeping in touch with the medical profession and informing them of the need for child health work, and prompting progress in this throughout the country, as well as stimulating the better training of physicians for preventive service in their private practice, and the better training of health administrators."

The various campaigns of publicity, such as the one recently inaugurated by one of our life insurance companies in one of the popular monthly magazines on behalf of the Schick test, tend to bring the practice of medicine into closer contact with the world outside the "forbidden city," with the result that the public will not be slow in demanding better men and a higher standard of practice.

As urologists, our share in these significant movements is not a negligible one, but concerns itself in a serious manner with the proper training of the urologist. Scarcely more than a generation ago there was scant recognition of this specialty, of its claim in hospital and college work, in genito-urinary surgery in the clinic or in private practice.

In spite of the fact that today full recognition has not been given all specialties, there is a movement on foot against the undergraduate curriculum as it obtains today, and a reduction in the number of specialties taught is the watchword of this movement. It may come to pass that some of the specialties will either not be taught at all or will only be given a very limited amount of instruction, in which event, we, as medical educators, must provide plenty of opportunity for post-graduate instruction, not only for those who wish to specialize but also for the recent graduate, and for the general practitioner who wishes further to perfect himself in a special line of work.

TRAINING

When the question of the training of the specialist is discussed, let me state at the outset that I am unqualifiedly in harmony with the view that the specialist must be broadly trained, the more broadly trained the better

* Chairman's address, read before the Section on Urology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

Criticism has been directed against some of the specialties because of the alleged narrow views that the specialist entertains. It is asserted that this is due to his lack of the right sort of training and to the narrow confines within which he works. The urologist should always be trained along the lines of the widest gage, since much of his work is closely allied with many of the other departments of medicine and surgery. To be more specific, one may state by way of illustration that many of his problems of differential diagnosis touch on many of the other departments of medicine.

The differential diagnosis between lesions of the kidney and ureter and the various lesions of the gall-bladder and liver, as well as various lesions of the stomach, duodenum and appendix on the right side of the abdomen, make it imperative that he possess a comprehensive knowledge of abdominal diagnosis. Because of their rarity, lesions in the left upper quadrant do not often require differential diagnosis. However, occasionally, a differentiation is necessary between lesions of the spleen and the left kidney. The urologist must therefore be familiar with the various diseases of the spleen that may be confused with lesions of the kidney. Not only must he be broadly trained, so as to be in a position to make this differentiation, but, furthermore, he must be broadly trained so as to exercise the best judgment, for example, if at operation an enlarged spleen is found, his knowledge of the pathology and the physiology of this organ should preclude its removal just because it is enlarged.

This broad training should include also a working understanding of the pathology of the female genital tract, since many of the genital lesions in women produce bladder symptoms. The urologic complications of pregnancy constitute a chapter which should not be foreign to him.

Various urinary disturbances and sexual symptoms are due to lesions in the central nervous system, and an understanding of them, as well as what lesions might cause them, will greatly aid one engaged in the field of urology in making at least a tentative diagnosis. Rare lesions of the nervous system may be due to disease of the blood, such as primary pernicious anemia with secondary degeneration of the spinal cord, producing bladder symptoms. The training of the well-equipped urologist should stand him in good stead in the recognition of the important point that the bladder symptoms are due to disease of the cord, that the disease of the cord is secondary to the pernicious anemia, and that the bladder symptoms are merely incidental, hence treatment should not consist of bladder irrigations but should be directed to the primary cause.

He should also be familiar with pediatric conditions and be in a position to render aid in an understanding way, since many urologic problems in diagnosis and treatment in infants and children are continually coming up for consideration.

If one pauses to consider the various diagnostic problems that today confront the urologist, it would be foolhardy to say that his training should not be on the broadest basis, which should include not only a complete knowledge of the various genito-urinary diseases, but a surgical training that will enable him to carry out the various major urologic operations. Should coexisting pathologic conditions be found that need correction, he should be in a position to care for such conditions.

Criticism has been directed against us in the past for our supposed lack of ability as surgeons. This,

it seems to me, is a criticism of our system of medical education and of our system of training men, more than of us as individuals. This is a fault that must be corrected in the future by providing ample opportunity for the training of urologic surgeons who will be above this criticism.

That we, as urologists, are not the only specialists who have been criticized is made apparent to us in a recent address by Dr W. J. Mayo,¹ who says that more than 50,000 men are performing operations in the United States today and of this number only about 10,000 are well qualified surgeons.

In order to reach this enviable goal, it is absolutely necessary to have at our disposal a sufficient amount of clinical material to enable the young man in training to operate under the supervision of the chief of the service, or his assistants. This means that a service of a sufficiently large number of beds must be established in all teaching hospitals.

It might be inferred from the foregoing that I am an enthusiast on the subject of surgical craftsmanship. I shall correct this impression at once by asserting that we should not countenance technicians and regard purely technical performances of operations as the end to be attained. This is only one link in the chain of training. Accurate urologic diagnosis and a correct appreciation of surgical pathology should go hand in hand with the ability to operate. The relationship between pathology and diagnosis is a close one, a urologist cannot be of the first rank if he fails to recognize this fact.

This is particularly true in our own chosen field, in which the development of the diagnostic side was the prime factor in the development of urologic surgery. As has been stated, the criticisms that were launched against the technic of the urologic surgeon were due to the fact that the material at hand was limited, and the urologist was greatly handicapped, even today, despite the fact that our specialty is recognized as a distinctive one. The opportunities for the development of the surgical side of our work are not what they should be.

That this condition is showing signs of improvement is a hopeful note that must be pleasing to all. To ascertain the status of urology in hospital practice, a questionnaire was submitted to a number of hospitals in the United States and Canada, hospitals containing more than a hundred beds. This survey shows that 146 hospitals in the United States and Canada replied to the questionnaire. Of this number, 102, or 69.8 per cent, stated that they had a genito-urinary service, thirty, or 20.5 per cent, stated that they did not have a genito-urinary department, and fourteen, or 9.5 per cent, failed to answer the question at all. An important query was, whether any restriction was placed on the number of beds available for urologic cases. Seventy-three hospitals do not limit the number of cases admitted, and only thirty-nine stated that the beds were limited.

The growth of urologic services, as shown in this survey, should be of interest to all of us, for it is a healthy growth, achieved in a conservative manner, and due altogether to the excellent work that has been accomplished by the urologists. The first hospital to institute a urologic department was the Hartford Hospital in 1856. From 1856 to 1904, there were eleven genito-urinary services, whereas from 1905 to 1924, eighty-eight genito-urinary departments were instituted.

¹ Mayo W. J. Surg. Gynec. & Obst. 38: 282 (Feb.) 1924.

Many of the questionnaires were sent to teaching hospitals, and it was very gratifying to note that, of the 126 institutions which replied to the question of whether or not their genito-urinary cases were used for teaching, eighty-eight hospitals replied in the affirmative and thirty-eight in the negative. In Canada, the situation is particularly fortunate, eight out of eleven hospitals stated that the cases are utilized for teaching, whereas only three hospitals do not follow this course.

The disposition of patients with venereal disease suffering with complications revealed the fact that ninety-seven hospitals admit cases with complications of gonorrhea, such as gonorrheal arthritis, or epididymitis, and twenty-five hospitals do not. In seven instances, the statement was made that only occasionally are such cases admitted.

In eighty-nine of the 106 hospitals having services, the genito-urinary cases, on admission, are assigned to the genito-urinary department. As a part of the teaching of urology, it is important, of course, to give instruction in the treatment of venereal disease. In thirty-nine institutions, the venereal cases are limited in the number of beds for the treatment of these cases.

It goes without saying, that, in the training of the urologist and in the development of postgraduate instruction in urology, the hospital facilities must be of an adequate character. Failure to provide hospital facilities in the genito-urinary department means the failure to attract students to do graduate work in this field. It means a complete breakdown in any effort to provide proper graduate training in our specialty. No student will be attracted to take up urology as a specialty when the opportunities do not exist for bringing him in touch with those cases which require surgical treatment.

The outpatient department of genito-urinary surgery must, first of all, be a well equipped department as regards the physical equipment. It must have a sufficient amount of modern equipment so that all, or nearly all, diagnostic procedures, and many of the therapeutic measures, can be carried out. The outpatient department should have a competent staff of instructors, and patients in this department are deserving of the same conscientious study and careful consideration that are given hospital cases and patients in private practice. It goes without saying that our unremitting attention to detail, both in the preoperative study and in the treatment of cases, as well as in the treatment after the operation is over, have been important factors in contributing to our success as urologists. In this way, we are able to render a better service to the patient than does the occasional operator who is interested only in the technical side.

A systematic amount of instruction should be given in the surgical pathology of the genito-urinary tract, and a definite plan should be devised to this end. Gross pathology can be taught from the material obtained at operation, and histopathology should not be neglected, not only the histopathology of lesions ordinarily encountered, but also the uncommon types of lesions, such as metaplasia, malakoplakia and cystitis cystica. Provision should be made for bacteriology, both experimental and clinical. Because of the frequency of urinary tract infections, this all-important branch of laboratory work must be given in a comprehensive way. The student in urology should have access to a modern serologic laboratory. The fundamental principles of the Wassermann test, the gonococcus fixation test and other serologic reactions should be understood.

Since much of our work is amplified by roentgenology, ample provision should be made for instruction in roentgenology, chiefly in the realm of the reading of films made of the urinary tract. Film reading is an important phase of this subject, and a well trained urologist should be able to read his own pyelograms, cystograms and ureterograms. He should be able to interpret carefully extra-urinary shadows, such as evidence of calcification in the lymph glands, and phleboliths. A certain amount of instruction should be given in allied roentgenologic studies, such as bone changes due to metastases in malignant disease of the kidney, bladder and prostate. Certain types of gonorrheal arthritis call for the reading of films. Recently, much consideration has been given to the role of the teeth in producing infection in the genito-urinary tract, hence, the urologist should be able to read correctly films of the teeth.

STIMULATION OF RESEARCH

Somewhere during his course of instruction, a student should be given a problem in research. This is a very important part, it seems to me, in any consideration of graduate instruction. Many problems still remain to be solved in the laboratory of experimental pathology, bacteriology, pharmacology and surgery. Nor is it necessary that all the research work be experimental, since, in a large clinic, there is always ample clinical material that gives abundant opportunity for working out many of the clinical problems in urology. The importance of a definite amount of time being devoted to the study of anatomy and physiology of the genito-urinary tract must not be overlooked, and provision must be made to give graduate students this opportunity. Instruction in these branches should be required, the intensive study of each depending on the knowledge or lack of knowledge of the candidate who contemplates being trained as a genito-urinary surgeon. My own experience, and I am sure this is the experience of other urologists, has made plain how important an asset a complete knowledge of the anatomy and physiology of the genito-urinary tract is in operative work, and in establishing a diagnosis when the shadows of doubt fall thick and fast. I believe it should be impressed on the graduate student that both anatomy and physiology of the genito-urinary tract are studies of prime importance, and that though he may think that, having finished with them in his undergraduate days, he is through with them, he will not succeed as a surgeon of the high quality he should be, if he does not review them at the beginning of his graduate study of urology.

122 South Michigan Avenue

Action of Quinin in Malaria—In the treatment of malaria, the train of events is, in our opinion, as follows. Quinin given to a patient whose blood contains numerous malaria parasites invariably destroys directly, or more probably indirectly, large numbers, but not all, of the parasites, thus setting free a considerable quantity of soluble antigen. The antigen provokes by stimulation of the host's tissues the formation of immune body. The immune body, if present in sufficient amount, destroys the remaining parasites, thus resulting in sterilization of the infection and in the cure of the patient. For a cure to be obtained, this hypothesis demands, first the setting free of a considerable quantity of antigen by the destruction of a large number of parasites, and, second, a capacity on the part of the host to respond to the antigen by the formation of a sufficient quantity of immune body. If, for any reason, either of these two requirements is not satisfied, the infection is not completely sterilized and a relapse occurs.—Yorke W and Macfie, J W S. *Tr Royal Soc Med & Trop Hyg* 18 25 (March-May), 1924

INTRAPERITONEAL HEMORRHAGE FROM
RUPTURED OVARIAN CYST*

LOUIS E PHANEUF, M D

Associate Professor of Clinical Gynecology, Tufts College Medical
School Gynecologist and Obstetrician, Carney Hospital
BOSTON

Clinically, ovarian hematomas are divided into four well recognized types—the large ovarian cysts with hemorrhagic contents due to twisting of the pedicle of the cyst or other conditions, the perforating hemorrhagic (chocolate) cysts of the ovary so well described by Sampson, and the follicular and corpus luteum cysts of the ovary which on their rupture may give rise to severe intraperitoneal hemorrhage.

The first type, as a rule, does not give rise to intra-abdominal hemorrhage, the second type likewise gives rise to but little bleeding in the peritoneal cavity, since the perforation in the cyst becomes readily sealed by becoming adherent to the peritoneum of the pelvis or to the adjacent organ with which it comes in contact. It is therefore with the third and the fourth types, or the follicular and the corpus luteum cysts with rupture causing intraperitoneal hemorrhage, that I wish to deal in this paper.

During the summer of 1923, from July 18 to August 10, I operated on two women with severe intraperitoneal hemorrhage giving rise to alarming symptoms. The first case was diagnosed as a ruptured ectopic pregnancy, the second was presumed to be an ovarian cyst with twisted pedicle, complicated by acute appendicitis. At operation it was found, in both cases, that the hemorrhage was due to the rupture of a follicular cyst of the ovary. The reports that follow explain these cases in detail. These errors in diagnosis prompted me to look up the literature on the subject, in order, first to ascertain the frequency with which the lesion occurred and, secondly, to establish how often the condition had been diagnosed before operation. Previous to 1900 the references do not establish clearly whether or not the hemorrhage was due to ectopic gestation, for this reason only the literature since that period has been abstracted.

A review of the cases reported leads one to infer that bleeding from a follicular cyst or from a corpus luteum cyst of the ovary, with rupture, should be considered in the differential diagnosis of acute conditions of the abdomen in the female.

As far as the etiology is concerned, Heidler¹ is inclined to discredit the role ascribed in certain cases to normal coitus in the production of ovarian hyperemia, but concludes that in rare instances it can give rise to follicular hemorrhage. Kermauner orally described to him a case in which the patient, following a hot bath and cohabitation, awoke after two hours of sleep with violent pain in the right side of the abdomen. A surgeon was summoned, and he diagnosed appendicitis. Laparotomy showed a large quantity of free blood in the abdomen, proceeding from a bleeding follicle of the right ovary. Resection of the ovary was followed by recovery. The microscopic examination showed no evidence of pregnancy.

Trauma, such as criminal abortion, the injection of green soap (Strassman), sports (tennis, riding or

rowing), operations, especially vaginal, or therapeutic manipulations, may be differential etiologic factors.

The influence of other factors, such as poisoning from phosphorus, infectious diseases, disorders of the heart and the liver, apoplexy of the heart and the brain, influenza and rheumatism, is suggested.

Hornung² states that ovarian hematomas are often found in normal ovaries. The corpus luteum obviously plays an important role in the genesis of ovarian hemorrhage, and the process of menstruation, with its heightened capillary permeability, appears to be a contributing factor. Varicose dilatations in the ovarian stroma, as described by Schroder, can burst when the follicle ruptures.

Injurious factors of a general or local nature, such as active or passive hyperemia, heart and lung trouble leading to general venous stasis, tumors in the small pelvis, uterine retroflexion, inflammatory processes or a sudden checking of normal circulation as in torsion of a pedicle, can influence ovarian hemorrhage. The assertion made by Kehler and Strassman that masturbation and interrupted coitus play an important role has not been proved, but excessive cohabitation obviously can produce a dangerous hyperemia in the generative organs, as shown in cases of Zacharias, von Winiwarter and Kober. It is true, however, that in this connection trauma may be a factor (Pfannenstiel). Any pathologic condition of the blood, such as leukemia, toxic injuries, petroleum burns and infectious diseases, can be of etiologic significance.

In Lindig's³ case, the abdomen was found full of blood at operation, and the tubes were intact. The right ovary was bluish and enlarged, and contained a 1.5 cm tear, which led into a cavity the size of a hazelnut. The left ovary seemed normal. The right ovary was extirpated, and the patient made a rapid recovery.

A very careful histologic diagnosis showed no signs of the reactive phenomena following implantation of an ovum. In the vicinity of the tear was found a blood vessel clogged by a thrombus. There were no degenerative or inflammatory modifications of the vascular walls, nor any anatomic condition to explain the presence of this object, and no clinical data suggesting circulatory disturbances. Only one fact could be ascertained with certainty, i. e., that in view of the wealth of blood platelets in the thrombus, the clot had originated in the living organ, and had not developed after the operation. The strain on the ovarian blood vessels caused by the periodic variation in blood pressure is an established fact, and this is responsible, eventually, for menstrual and ovulation sclerosis.

The defective elasticity of the blood vessel was doubtless a contributing factor in the production of the extravascular collection of blood. An analogy is to be found in the so-called aneurysm of the arteries of the brain (intramural and extramural hematoma). The majority of the cases appear to have occurred in the premenstrual period.

Savage⁴ believes that the ovarian hematomas of the graafian follicle, as indicated by macroscopic and microscopic appearances, "result from a multiple and premature ripening of the graafian follicles, which is due to the presence of an increased amount of blood in the ovary apart from the normal yellow body, that an

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

1 Heidler H. Haematoma ovarii interstitiale. Zentralbl f Chir 50 642 1923.

2 Hornung R. Das Ovarium als Quelle intraperitonealer Blutungen. Zentralbl f Gynak 47 523 1923.

3 Lindig P. Eine histologische Studie über das Wesen ovarialer Blutungen. Zentralbl f Gynak 45 1182 (Aug 20) 1921.

4 Savage S. Hematoma of the Ovary and Its Pathological Connection with the Ripening and the Retrogression of the Graafian Follicle. Brit Gynec J 21 285 305 315 321 1905 1906.

outpouring of blood takes place into these follicles from the vessels of the thecae internae, that the cysts unite, and that, being immature (possibly by reason of the absence of the presiding ovum), the normal retrogression of the follicles does not take place, and a blood cyst remains. It may be noted that the pathological condition of these blood tumors, and of the amount of the fluid contents in them, is brought about more by the rupturing of the blood vessels in association with immature follicles than by the enlargement and subsequent bursting of these follicles."

Of the ovarian hematomas of the corpus luteum he says "This group will include those blood cysts which arise at a stage in the life history of the graafian follicle after the lutein cells have become fully developed. Lutein cells may be present or absent in the tumors of this group according to the time that has elapsed since the retrogression of the follicle commenced, and also according to the extent of the inflammation present."

Winiwarter⁵ writes that, of the three groups outlined by Orthman, (1) follicular hemorrhage, (2) corpus luteal hemorrhage and (3) hemorrhage of the stroma, the first is the most frequent, and the last, genuine ovarian apoplexy, the most rare.

When a mature follicle bursts, there is a secondary low grade hemorrhage which can be designated as normal. One speaks of follicular hemorrhage only when the bleeding takes place in a closed and unripe follicle. The effusion which is especially frequent in a cystically degenerated ovary, can be resorbed without producing clinical symptoms, or can break through into the abdominal cavity and give rise to hematocele, as in the case described by Winiwarter.

Benthin,⁶ Kynoch⁷ and Lockyear⁸ wrote on pelvic hematocele from corpus luteum cysts, while Poulain⁹ described retro-uterine hematocele without rupture of the tube.

Gabriel¹⁰ elaborated on the subject of ovarian hemorrhage from corpus luteum cyst, Bartels,¹¹ in the title of his paper, asked, "Can rupture of the corpus luteum cause severe intraperitoneal hemorrhage?" Forssner¹² took up the question of severe intraperitoneal hemorrhage from the ruptured graafian follicle or corpus luteum cyst without coincident pregnancy, and compiled forty-seven cases from the literature, usually accepted as instances of follicular hemorrhage, but in which insufficient examination had been made to make the diagnosis positive.

Ruptured ovarian hematomas with intraperitoneal hemorrhage were discussed by Edgar,¹³ Heidler¹ and Jayle,¹⁴ who reported three cases of hematic cysts with severe intraperitoneal hemorrhage, and in addition abstracted thirteen cases from the literature. Leriche

and Blanc-Perduet,¹⁵ Ohlman¹⁶ and Romme¹⁷ also wrote on the same subject.

Lee¹⁸ brought to attention the question of hemorrhagic cyst of the ovary simulating ectopic pregnancy, Martin¹⁹ did likewise with tubo-ovarian hematocele simulating ectopic gestation, and Michon²⁰ described intraperitoneal hemorrhage from a solid tumor of the ovary, with torsion of the pedicle.

Life endangering bleeding from the ovary formed Roll's²¹ subject, and ovarian hemorrages that of Rosseau²².

Savage⁴ took up hematoma of the ovary and its pathologic connection with the ripening and the retrogression of the graafian follicle, and reported seven cases. Although no signs of intraperitoneal hemorrhage were found at operation, the hemorrhage occurred as the cysts were ruptured in their extraction.

Tartansen²³ described a case of pelvic hematocele from a ruptured hematic cyst of the ovary, associated with fibroid disease of the uterus and in which, on examination, no ectopic gestation was found.

TABLE 1—Intraperitoneal Hemorrhage from Ruptured Follicular Cyst

Reporter	Reference	Number
Bonneau	Paris chir 4 1101 1912	1
Cranwell	Ann de gynec et d obst 9 226 1912	1
Cohn	Arch f Gynak 94 505 1913	3
Engstrom	Mitt a d gynak Klin d O Engstrom in Helsingfors 7 147, 1907 1908	1
Errard and Fournier	Bull et mem Soc anat de Paris 91 203 1921	1
Kermauner	Cited by Heidler ¹	1
Hornung	Zentralbl f Gynak 47 523 1923	2
Lindig	Zentralbl f Gynak 45 1182 (Aug 20) 1921	1
Novak	J A M A 68 1160 (April 21) 1917	1
Pfeilsticker	Med Cor Bl d Wurtemberg arztl Ldsver 83 535 1913	1
Primrose	Tr Am Surg A 30 599 1912	2
Simonds	Munchen med Wchnschr 64 1565 1917	1
Thies	Zentralbl f Gynak 47 525 1923	2
Winiwarter	Ztschr f Geburtsh u Gynak 68, 1911	1
Yersin	Rev med de la Suisse rom 40 818 (Dec) 1920	1
Total		20

In Tables 1 and 2, I have grouped these cases in which the reporter gave either a follicular cyst or a corpus luteum cyst as the specific cause of the abdominal hemorrhage. There were twenty cases from follicular cyst and twenty-two cases from corpus luteum cyst. In Table 3, I have added seventeen cases of hematic cysts, type not stated, thus making a total of fifty-nine cases obtained from the literature.

Heidler's¹ case is worthy of mention.

A 20 year old nullipara, with a history of defloration and cerebral disorders resulting in an attempt at suicide, had menstruated profusely at the age of 18, at first regularly. At the last regular period, there occurred a profuse hemorrhage with abundant coagula, which continued up to the time of admission.

15 Leriche R and Blanc Perduet, M. Hemorrhage pelvienne intraperitoneale diffuse par rupture d'un kyste hemorrhagique. Rev de gynec et d obst 8 529 534 1911.

16 Ohlman K H. Ovarian Hematoma and Ovarian Hemorrhage. Duodecim Helsinki 29 55 76 1913.

17 Romme, Madeline. Hemorrhage abdominale d'origine ovarienne. Ann de gynec et d obst 12 736 738 1917.

18 Lee J A. Hemorrhagic Cyst of the Ovary Simulating Ectopic Pregnancy. Brooklyn M J 28 209 1905.

19 Martin P F. Tubo-Ovarian Hematocele Simulating Ectopic Gestation. Surgical Conservatism in Dispute. J Indiana M A 1910 pp 481 484.

20 Michon E. Tumeur solide de l'ovaire torsion du pedicule hemorrhagie intraperitoneale laparotomie guérison apres embolus pulmonaire (Rapport de Soulgou). Bull et mem Soc de chir de Paris 25 1072 1077, 1909.

21 Roll J. Life Endangering Bleeding from the Ovary. Norsk Mag f Lægevidensk 9 27 31 1911.

22 Rosseau E. Hemorrhagies ovariennes. J med de Bruxelles 8 785, 1903.

23 Tartansen. Pelvic Hematocele. Uterine Fibroid Disease, Rupture of Hematic Cyst of Ovary. No Ectopic Gestation. J Obst & Gynec Brit Emp 17 246 1910.

5 Winiwarter. Retro Uterine Hematocele Due to Bleeding from a Degenerated Ovary. Ztschr f Geburtsh u Gynak 68 1911.

6 Benthin. Hematocele als Folge einer geplatzten Corpus Luteum Cyste. Monatschr f Geburtsh u Gynak 27 532 1913.

7 Kynoch J A C. Pelvic Hematocele from Rupture of a Blood Cyst of the Ovary. J Obst & Gynec Brit Emp 23 304 1913.

8 Lockyear. Cuthbert. Pelvic Hematocele of Ovarian Origin. Proc. Roy Soc London Obst and Gynec Sec 8 106 1910. J Obst & Gynec Brit Emp 17 253 1910.

9 Poulain J. Hematocele retro-uterine sans rupture de la trompe. Rev mens de gynec, d obstet et de pediat 5 76 78.

10 Gabriel A. Ueber die Entstehung der Hematocele retrouterina aus Ovarialblutungen. Arch f Gynak 64 449 1901.

11 Bartels C D. Can Rupture of the Corpus Luteum Cause Severe Intraperitoneal Hemorrhage? Ugeskr f Læger 84 935 (June 5) 1919.

12 Forssner H. Konnen grosse intraperitoneale Blutungen aus graafischen Follikeln oder Corpus Luteum Bildungen ohne Vorhandensein von Schwangerschaft entstehen? Arch f Gynak 105 74 106, 1916.

13 Edgar J. Ruptured Hematoma of the Left Ovary the Cause of Pelvic Hematocele. Glasgow M J 53 294 1900.

14 Jayle. Pelvic Hematocele from Rupture of Blood Cyst of the Ovary. Rev de gynec et de chir abd 13 185 222 1909, Abstr Brit M J 16 50, 1909.

in the clinic Examination showed a small, anteverted uterus, and to the left and posterior to this a small, sensitive, not entirely mobile tumor, the size of a pigeon's egg Treatment based on the assumption of juvenile metrorrhagia effected no results After three days, the temperature had risen to 38.9 C (102 F) A curettage and a posterior vaginal incision were done, no blood was found in the Douglas space, and the incision was sutured In the next days, the hemorrhage gradually ceased, but the temperature remained high About two and a half weeks after the operation, symptoms which seemed to indicate scorbutus appeared, but an antiscorbutic diet pro-

the corpus luteum seen at operation The appendage was removed, and the patient recovered

In the light of this operator's experience, one might hesitate to leave uncared for an ovary with a large corpus luteum in it

Taylor²⁵ reports a case in which the hemorrhage had occurred from a corpus luteum cyst of the right ovary, and eighteen months later from a corpus luteum of the left ovary The left ovary had appeared normal at the time that the right was removed The patient made an uneventful recovery

The preoperative diagnosis made in most cases abstracted from the literature were acute appendicitis, extra-uterine pregnancy, tubal pregnancy, ovarian cystoma, ovarian hemorrhage, acute appendicitis or intestinal perforation, severe intraperitoneal hemorrhage, inflammatory tumor of the adnexa, hematocele and tubal pregnancy abdominal hemorrhage, swelling of the pouch of Douglas, diseased adnexa, and internal hemorrhage

REPORT OF CASES

Dr John T Bottomley has furnished me with the history of a case of this kind which came under his observation

A woman aged 30 single had always been well, she had no trouble with menstruation, and had menstruated two weeks previously At 6 o'clock in the morning she was taken with sudden pain in the lower part of the abdomen, the pain was more on the right at first but extended across the abdomen, she vomited She was doing special nursing at the Bay State Hospital and had reached there at about 6.30 a m The superintendent said that she 'looked terrible' The temperature was 98.8 F the pulse at first scarcely perceptible, finally settled to 120 At 9.30 a m, she had to give up work and go to bed she felt faint, and the pain was severe and steady in the lower part of the abdomen Dr Paul saw her at about 9 and thought that she had a hemorrhage When Dr Bottomley saw her at about 1 p m she was pale, but not white, she still had severe pain and the whole abdomen was tense, the pulse was of good volume and about 100 to 110 in rate

An operation was performed under ether anesthesia, the peritoneal cavity was entered behind the belly of the right rectus muscle which was pulled outward below the umbilicus

TABLE 3—Intraperitoneal Hemorrhage*

	Number of Cases
From follicular cysts	20
From corpus luteum cysts	22
From hematic cysts (type not stated)	17
Total	59

* The seven cases reported by Savage were not included in this table since the hemorrhage occurred because of the rupture of the cysts during their extraction The forty seven cases collected by Forsner were also left out since he states that insufficient examination had been made to make the diagnosis positive

A great quantity of clotted and unclotted blood welled up through the opening the source was found to be a ruptured ovarian cyst (right) as large as a pullet's egg There were signs of old pelvic inflammation about the tubes and the ovaries The right tube and ovary were removed, the left tube and ovary were left in The uterus was not enlarged Layer suture of the abdominal wall was made There was an uninterrupted convalescence

AUTHOR'S CASES

CASE 1—Mrs M A aged 33 a tertipara was admitted to the Carney Hospital, Feb 10 1922, with a diagnosis of severe vomiting of pregnancy Her first pregnancy which had occurred eleven years previously, had terminated in a normal delivery, but she was severely lacerated one year later she

25 Taylor G Some Uncommon Causes of Pelvic Hemorrhage in Women Practitioner 101 37 39 (July) 1918

TABLE 2—Intraperitoneal Hemorrhage from Ruptured Corpus Luteum Cyst

Reporter	Reference	Number
Adams	Brit M J 1 712 1913	1
Barolin	Med Klin 16 9 (Jan 4) 1920	4
Bender and Marcille	Bull et mem Soc anat de Paris 1904 p 569	1
Berkrau	Charite Ann 34 571 1910	1
Bookman	M Rec 86 184 1914	1
Bovee	Surg Gynec & Obst 28 117 (Feb) 1919	1
Chassot	Rev me de la Suisse rom 40 453 (July) 1920	1
Cohn	Arch f Gynak 94 505 1913	3
Ferguson	Eding Obst Trans 37 307 1911 1912	1
Hind	Brit M J 2 189 1905	1
Ladinski	Am J Obst 62 487 1910	1
Smith	Am J Obst & Gynec 1 240 (Dec) 1920	1
Taylor	Practitioner 101 37 (July) 1918	2*
Warnshuis	Physician & Surgeon 24 123 1912	2
Zacherl	Arch f Gynak 119:18 (June) 1923	1
Total		22

* Same patient

duced no effect. The picture then resembled sepsis, high grade anemia developed, and the patient died of cardiac weakness after slight uterine bleeding

The necropsy showed endocarditis of the aortic valves, with insufficiency, hypertrophy of the left ventricle, and hemorrhagic diathesis, with bleeding into the renal pelvis, the surrounding tissue and the gastric and intestinal mucosa In the abdomen was found 0.5 liter of fluid blood and coagulum, the size of a fist, adhering to the omentum The tumor of the left adnexa proved to be an interstitial ovarian hematoma, the size of an apple (6.5 by 5.5 by 5 cm) The ovarian structure had almost completely disappeared in several places there were follicular cysts the size of a pea The stroma was infiltrated with blood

The bleeding into the free abdominal cavity was probably the result of the oozing of the blood through gaps in the ovarian tissue, for no rupture was demonstrated The bleeding into the ovary is to be regarded as a primary interstitial hemorrhage, due to the septic condition and the consequent bacteriotoxic injury of the blood vessels

It is possible that the removal of the left ovary might have saved the patient Heidler admits that a better acquaintance with the literature of the subject would have made possible an intravital diagnosis He believes, however, that death was due primarily to sepsis, and that operation would have been futile

Ferguson's²⁴ case is of interest, since it shows hemorrhage from a corpus luteum after operation

A patient aged 37, had a supravaginal hysterectomy performed by Ferguson, the operation being a simple one both tubes and ovaries were left behind During the operation, a large corpus luteum was noticed on the right ovary The operation was at 9.30 a m at 5 p m the nurse noticed that the patient was pale, at 8.30 that evening the pulse was 130 and very weak and there were marked signs of hemorrhage The wound was reopened under anesthesia, and a large quantity of clotted and fluid blood was found in the peritoneal cavity Dr Ferguson found that the bleeding had come from

24 Ferguson J H Case of Fibroid of the Uterus (Showing Unusual Form of Cystic Change) Removed by Supravaginal Hysterectomy Where Severe Postoperative Hemorrhage Occurred from a Corpus Luteum, Necessitating Reopening of the Abdomen and Removal of the Ovary Eding Obst Trans 37 307 1911 1912

had another normal delivery, complicated by acute pyelonephritis. Her mother had died of puerperal septicemia, while, eight years previous to admission, the patient had had extensive plastic operations together with a suspension of the uterus and an appendectomy performed at the Framingham Hospital. Menstruation began when she was 12 years old, the periods which lasted from two to three days, came at intervals of twenty-four days, her last menstruation had occurred Dec. 13, 1921, and had lasted three days. Her confinement was expected, Sept. 20, 1922.

She was referred to me because of almost continuous vomiting for nearly two months. The uterus was at the level of the umbilicus. She responded readily to treatment, which consisted of rest in bed and the intramuscular injection of an ampule of lutein morning and night 12 ampules being administered. She was discharged from the hospital Feb. 26, 1922, having been on the service sixteen days. During her stay in the hospital, the urine showed signs of chronic nephritis. The vomiting had completely stopped at the time of her discharge, and she was on a liberal diet.

She was admitted again, Sept. 13, 1922, in active labor, the vertex was presenting in the right occipitoposterior position and after an efficient test of labor, because of the previous high cervical amputation, no dilatation of the cervix was apparent. For this reason, a Kroenig cervical cesarean section was performed and she was delivered of a female child weighing 7½ pounds (3.3 kg.). The puerperium was uneventful, the incision healed by first intention, and the patient was allowed out of bed on the twelfth day. September 27, fourteen days after operation, she developed a phlebitis of the left leg, and on October 4, a phlebitis of the right leg, although the lesion on the right was not as severe as that of the left side. She had chills, she was delirious and extremely sick, the temperature ranged between 98.4 and 104 F., and the pulse between 79 and 120. She recovered from these complications, and was discharged well, November 19, after staying in the hospital sixty-seven days. Her baby had done well, and was discharged weighing 8½ pounds (3.8 kg.).

May 1, 1923, she returned to the hospital with a moderately severe uterine hemorrhage. Examination revealed the uterus slightly enlarged, and a small mass was felt in the left vault. Complete rest in bed and fluid extract of ergot, administered twice a day, had no effect on the hemorrhage. She was curetted May 9. The ether examination showed the left-sided mass to be movable, and it was thought to be a small ovarian cyst. A laparotomy was not considered at this time because of the patient's poor physical condition. The bleeding stopped after the curettage and she left the hospital markedly improved after staying there for sixteen days. The pathologic diagnosis was hypertrophy of the endometrium and chronic endometritis. There was no evidence of malignancy.

July 18 the patient reported at my office. She was pale in severe pain and, on examination, the mass on the left side appeared to have increased in size, both vaults were exquisitely tender. Shortly after the examination, she collapsed. A tentative diagnosis of ruptured extra-uterine pregnancy with severe intra-abdominal hemorrhage was made because of the fact that the patient had skipped a period and also because of the findings in the pelvis. She was immediately sent to the Carney Hospital, where she was operated on about two hours after being seen in my office.

The abdomen was opened by a median incision. When the peritoneum was opened, a large amount of blood, both liquid and clotted, estimated as a liter, was found in the abdominal cavity. The bleeding was proceeding from a ruptured ovarian cyst the size of an egg, in the left side of the pelvis. The right ovary showed a cyst, the size of a lemon, both tubes were normal, and the uterus was markedly hypertrophied. A supravaginal hysterectomy together with a double salpingo-oophorectomy was performed, and the abdomen was closed in layers.

The convalescence was uninterrupted, and she was discharged well August 1, fourteen days after the operation.

The pathologic diagnosis was hypertrophy of the endometrium with simple cysts of the ovaries.

CASE 2—Dr. H. G., aged 28, single, had a sudden fainting spell March 23, 1923, followed by vomiting for thirteen hours, there was no pain. The physicians that saw her called it idiopathic vomiting, but a surgeon diagnosed the condition

as chronic appendicitis. She was perfectly well two weeks later and was driving her own car. April 22, she was in an automobile accident, her injuries consisted of contusions of the left upper arm and the left thigh. She had sharp pains across the abdomen and a physician made a diagnosis of contusions. Since this accident, she had been unable to do any work without having sharp pains across the abdomen. In April and May, she had two attacks of jaundice and was constantly nauseated, the pain in the abdomen persisted. In June, she saw a neurologist, who said that she had typical neuroathemic symptoms. She could not eat, but stated that it was not the food that nauseated her. The neurologist consulted advised her to resume her practice. Driving her car gave her excruciating pain in the right side, radiating toward the thigh and symphysis. She continued to work until August 5, despite the pain. That day the right limb became rigid, and she had "terrific pain" in the abdomen. The next two days she made her calls and had no pain. The following day, at 1 p. m., she was doubled up with pain; the right leg was in flexion, the pain in the right abdomen was excruciating, she was distended, and the bowels had not moved for three days. Micturition was very painful. She was a physician, and as such diagnosed the condition as an ovarian cyst, as a patient, she called me on the telephone and made her own diagnosis of ovarian cyst with twisted pedicle. Later in the evening, she was seen by a surgeon, who made the diagnosis of appendical abscess.

The menstrual history began with the onset at 14 years. She missed the summer months but menstruated otherwise, every five weeks the periods lasting from three to four days. When 16, she had a severe attack of dysmenorrhea, which was called appendicitis at that time. She always had pain in the right lower quadrant, this was at times gripping, and at other times dull in character. The periods were regular from the age of 19 to 27, when she missed two periods. May 8, which was the date of her catamenia, she nearly collapsed with pain, but did not flow. June 8 a three-day period began in which she did not have pain. July 10 she had a scant menstruation, she was operated on, August 10, and flowed for three days, beginning August 13.

She was first seen by me, August 10. At this time, the abdomen was rigid, spastic and distended, the rectal examination was unsatisfactory, as it caused too much pain. The preoperative diagnosis was acute appendicitis or right ovarian cyst with twisted pedicle. After right oophorectomy and appendectomy had been performed at Springfield Hospital August 10, the postoperative diagnosis was ruptured ovarian cyst (right) chronic appendicitis, and severe intra-peritoneal hemorrhage.

Notes were made at the operation of a ruptured ovarian cyst (right), the size of a tangerine with one twist in the pedicle. There was a large amount of free blood in the pelvis, estimated as 0.5 liter. The right tube was normal, the left tube and ovary and the uterus were normal. The appendix had several concretions, and was removed in the usual way. The gall-bladder was thin walled and collapsible, there were no stones. The right kidney was freely movable and could be pulled down to the pelvis. The left kidney was normal. The spleen and the liver were normal. The abdomen was closed in layers.

The pathologic diagnosis was a follicular cyst of the ovary. The convalescence which was followed by Dr. Allen G. Rice, was uneventful, except for a small stitch abscess which showed staphylococci on culture. The patient was discharged from the hospital with a healed incision.

CASE 3—Mrs. R. M., aged 36 a sextipara, was admitted to the gynecologic service of the Carney Hospital Jan. 24, 1924, with uterine bleeding. The family and past histories were negative. She began to menstruate at 13 years, she was regular, every twenty-eight days, and flowed profusely without pain, for from six to eight days. She had had six pregnancies, which had terminated as normal deliveries.

The present illness had its onset, January 14, and consisted of a severe uterine hemorrhage, which was followed by "bloody staining" for two weeks. She had been confined to bed since January 14, and because of the continued bleeding, she was sent to the hospital.

The physical examination was negative except for the gynecologic condition. The abdominal examination elicited considerable tenderness in the right lower quadrant, spasm and rigidity were absent. The vaginal examination revealed a

lacerated cervix and perineum and a third degree retroversion. There was considerable tenderness in the right vault, although no mass could be felt.

The operation performed comprised dilation and curettage with bilateral trachelorrhaphy and colpoperineorrhaphy. A median abdominal, suprapubic incision was made. On exploration of the pelvis, the omentum was found to be stained with blood and adherent to the right tube and ovary. The adhesions were recent and easily separated. About an ounce of fluid blood was found in a pocket formed by the adhering omentum. The bleeding was issuing from a small rent in a corpus luteum of the right ovary, the right tube was normal as were the left adnexa, the uterus was in third degree retroversion. A mattress suture of chromic catgut was placed around the bleeding corpus luteum, the uterus was suspended by the round ligaments, and the appendix, which showed signs of chronic inflammation, was removed. The abdomen was closed in layers. The convalescence was uneventful, and the patient was discharged from the hospital, February 10.

The right-sided pain had led to the diagnosis of chronic appendicitis before operation, and while this condition was found to exist, I am convinced that the pain was caused by the slight hemorrhage and by the adhesions to the right tube and ovary.

CONCLUSION

1 Previous to 1900, the literature is not clear as to the hemorrhages into the peritoneal cavity caused by ruptured follicular and corpus luteum cysts. Up to that time these hemorrhages were not clearly differentiated from those resulting from extra-uterine pregnancy.

2 Since 1900, the literature contains a number of case reports, each writer having met but few cases.

3 In most instances, the true diagnosis was established after the opening of the peritoneal cavity, a preliminary diagnosis of ectopic pregnancy or acute appendicitis having been made.

4 A review of the literature leads one to infer that this condition, although infrequent, should be given consideration, in the differential diagnosis of acute conditions of the abdomen in women.

395 Commonwealth Avenue

FATE AND FUNCTION OF THE OVARIES AFTER HYSTERECTOMY*

ALICE FREELAND MAXWELL, M.D.
SAN FRANCISCO

The diverging views concerning the fate and function of ovaries that are retained after hysterectomy indicate that there are important problems still to be met in gynecology. Radicals and conservatives cite in support of their opinions the physiology of the ovary, its influence on metabolism and the normality of the individual, and its functional value at different periods in the woman's existence.

Radicals claim that the ovaries are essential for proper growth and development only during infancy and childhood, when they serve as glands of internal secretion. They state that, at puberty, the ovaries assume their specific and important role of reproduction, menstruation being only a physiologic mechanism related to this process. After sexual maturity is reached, they hold that the ovary is without somatic influence and that it is concerned only with procreation.

* From the Department of Obstetrics and Gynecology, University of California.

Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

The radicals advocate the removal of the glands when hysterectomy is necessary in adult life, since reproduction is no longer possible without a uterus, and the ovaries, therefore, have no function. Moreover, they assert that glands left after hysterectomy remain as a distinct menace because of their tendency to cystic or neoplastic degeneration. They believe that the ablation symptoms arising from a surgical menopause are incon-

TABLE 1—Years Under Observation

Years	Number of Cases	Per Cent
1-2	191	36
2-3	108	22
3-4	61	14
4-5	54	11
5-6	47	9
6-7	21	5
7-8	18	3

stant and transient and are of only slight significance in the well balanced, unemotional type of women.

Conservatives, however, take a sharply contrasting view. They emphasize the dual function of the ovary, and urge that of no less importance than the reproductive function is the part that it plays as a gland of internal secretion. These observers state that this trophic influence of the ovary is of great importance to the woman, proceeds independently of the uterus, and is not affected by its removal. They assert that there is no evidence that the internal secretion ever ceases. The conservatives also emphasize the severity of ablation symptoms and believe that these mental and physical disturbances are definitely modified or controlled by leaving the glands, however, the integrity of these is materially affected by disturbances of the circulation and contiguous pathologic conditions. Altogether, the conservatives feel that the ovaries are of such importance as to justify very definite indications for their removal.

Eight years ago, we began a study at the University of California Hospital to determine the proper disposition of these glands when hysterectomy was done. It would appear that observations of this nature would be so frequent that all surgeons would have long since come to an agreement. Yet, in spite of numerous discussions, this problem remains in the foreground of gynecologic investigations. Interest in this subject has been renewed and stimulated since the advent of radium in the treatment of various pelvic disorders.

What happens to conserved ovaries is a complex question. The fate of the organs undoubtedly is dependent on several factors. My purpose in this paper is to present a clinical retrospect, and conclusions from observations.

My report consists of an analysis of the surgical menopause as it occurred in women with and without ovarian tissue. The frequency, severity, time of onset and duration of ablation symptoms have been studied and contrasted with similar disturbances of the natural menopause. Factors that might tend to modify these symptoms have been reviewed and grouped according to the age of the patient, her general condition before operation, the pelvic pathologic condition and the type of ovaries that were retained. The value of the conserved glands has been balanced against their tendency to degeneration. To complete the study, results with ovarian therapy have been included.

The material consists of 500 cases of hysterectomy, followed from one to eight years. Operative records

were made in all cases, which furnished detailed description of the retained ovaries, the surgical technic which aimed to preserve the blood supply to the glands, and the presence or absence of residual pathologic changes after hysterectomy which might affect the glandular tissue (i. e., adhesions, varicosities, peritonealization). The cases were controlled by frequent postoperative pelvic examinations and questionnaires, the subjective symptoms and objective findings were carefully recorded. The conclusions have been determined solely by the evidence afforded by my own clinical observations.

If a tabulation of this nature is to be of any value, it is essential that the period of observation extend over considerable time. Half of the cases were followed for more than three years, no case followed for less than one year has been included in this study. It is often difficult to convince the patient of the necessity of reporting to the clinic for examination for years after operation, particularly if she is free from pain and symptoms of pelvic disorder.

The menopause is usually accepted as an expression of the termination of the cyclic phenomena in which the ovaries and endometrium participate. That this disruption is more far reaching, however, is evidenced by

TABLE 2—Frequency of Vasomotor Symptoms

	Number of Cases	Postoperative Symptoms Per Cent
Hysterectomy with removal of ovaries	329	80
Hysterectomy with retention of ovaries	171	42
Normal menopause		Approximately 50

disturbances of other units of the endocrine system and by a series of functional disorders of vasomotor, cardiac, gastro-intestinal and urinary origin, and by alterations in the nervous equilibrium. The somatic influence of the glands is proved by the local atrophies that occur following their removal. Of these disturbances, the vasomotor phenomena are most common and distressing.

TABLE 3—Onset of Menopausal Symptoms

	Number of Cases	Immediate Per Cent	Delayed Per Cent	Total Per Cent
Hysterectomy with removal of ovaries	329	80		80
Hysterectomy with retention of ovaries	171	27	15	42

FREQUENCY

The surgical menopause differs from the normal climacteric in that in the former there is an abrupt termination of the menstrual function, whereas in the latter this alteration is more gradual and associated with other evidences of senility. The vasomotor reactions characteristic of the normal climacteric occur in about 50 per cent of women. The frequency of these reactions found in our series of surgical menopause is given in Table 2, which shows that the frequency of vasomotor reactions is definitely determined by the presence of ovarian tissue, and that the absence of the uterus per se does not affect the issue as shown by the similarity in the frequency of disturbance of the conservative group and natural menopause.

TIME OF ONSET

An analysis of the immediate and the delayed disturbances more strikingly emphasizes the immediate postoperative advantages of conserving ovarian tissue.

Study of the records indicates that the protective influence of the retained ovary is not permanent, and tends to disappear gradually in a definite number of women.

The delayed symptoms usually come on during the first year (78 per cent), most of them starting within a few months after operation. Occasionally, they did

TABLE 4—Onset of Delayed Menopausal Symptoms with Conserved Ovaries

	Number of Cases	Per Cent.
½ year	14	56
1 year	5	20
2 years	2	8
3 years	3	12
5 years	1	4

TABLE 5—Frequency of Severe Menopausal Symptoms

	Number of Cases	Severe Disturbances Per Cent
Hysterectomy with removal of ovaries	329	30
Hysterectomy with retention of ovaries	171	12

not present themselves until several years had elapsed in one case, not until nearly five years after operation. One fourth of the cases developed no symptoms until two years or more following operation. Since there is evidence to the effect that many women who escape the surgical menopause are likely to go through the climacteric at the normal time, we attempted to establish a causal relationship between the delayed symptoms and the normal menopausal age. This association existed in several of our patients, yet could not be the rule, since the ages in more than half these delayed menopausal cases were the early or middle thirties.

SEVERITY

Symptoms of the surgical menopause vary in considerable degree and are undoubtedly affected by many factors, particularly the nervous and psychic stability of the individual. As I show in a later table, the patients with normal hemoglobin are less likely to exhibit severe reactions than are patients with anemia.

I feel that this variation in the frequency of severe reactions in the two groups emphasizes the value of retaining normal ovaries. These severe reactions usually occasion the women great physical and mental distress, and are by no means of temporary duration, as shown in Table 6.

TABLE 6—Average Duration of Vasomotor Symptoms

	Severe	Moderate	Average
Hysterectomy with removal of ovaries	3 yrs	2.5 yrs	2.7 yrs
Hysterectomy with retention of ovaries	2.25 yrs	2.25 yrs	2.25 yrs
Normal menopause		Approximately	2.5 yrs

It is of interest to note that the average duration of vasomotor symptoms in the natural and in the surgical menopause is practically identical, which suggests that, in the majority of women with normal temperamental stability, the readjustment that ultimately occurs is not modified by the absence of the uterus and ovaries. The prolongation of these disturbances to from four to seven years in 11 per cent of women with symptoms (thirty-eight cases) contradicts the assertion that these phenomena are transient. Nor are we able to support

the statement made by some that the menopausal symptoms are but manifestations of psychic or nervous upheavals that were the sequelae of unsatisfactory surgery. Evidence for our view is afforded by the fact that the preoperative complaints were relieved in more

TABLE 7—*Relation of Age to Frequency of Vasomotor Symptoms*

Years	Hysterectomy With Removal of Ovaries		With Retention of Ovaries	
	Number of Cases	Symptoms Per Cent	Number of Cases	Symptoms Per Cent
10-20	6	82		
20-30	77	79	14	35
30-40	118	88	71	44
40-50	100	81	58	41
50-60	24	79	17	53
60 plus	4	25	11	16

than 95 per cent of cases, and also because the normal and surgical menopause are of about the same average duration.

FACTORS THAT TEND TO MODIFY VASOMOTOR SYMPTOMS

Many of the women between the ages of 40 and 50 had irregular menses and were entering the normal climacteric, 10 per cent of these women had developed preoperative menopausal disturbances. In the large majority of the women between the ages of 55 and 60 or more menstruation had ceased and 50 per cent had had preoperative symptoms. It is of interest to note the

TABLE 8—*Relation of Hemoglobin to Frequency of Vasomotor Disturbances*

	Hemoglobin 70 Per Cent and Above Symptoms Per Cent	Hemoglobin Below 70 Per Cent Symptoms Per Cent
Hysterectomy with removal of ovaries	20	80
Hysterectomy with retention of ovaries	11	89

onset of disturbance in 25 per cent of women of this age. The table indicates that, at any age, it is an advantage to the patient to retain the ovaries.

If we admit that the postoperative results might be closely related to the preoperative general resistance and health of the women, a study of the hemoglobin determination as an index of the physical condition is very striking.

The finding in Table 8 accords with the accepted idea that women of lowered preoperative physical standards, with their narrower margin of equilibrium, are very

TABLE 9—*Relation of Preoperative Blood Pressure to Frequency of Symptoms*

	Normal* Blood Pressure With Symptoms Per Cent	Hypertension† With Symptoms Per Cent
Hysterectomy with removal of ovaries	78	82
Hysterectomy with retention of ovaries	40	44

* Systolic pressure up to 140 mm of mercury
† Systolic pressure above 140 mm of mercury

much more likely to be disturbed by any procedure than are women of normal physical equipment.

While there is a slight increase in frequency of postoperative symptoms in some women with hypertension, yet the difference is not striking. Unfortunately, our

data did not include postoperative pulse pressure observations.

The average age in this group was 37 years. The table, while not conclusive, indicates that, in the presence of fibroids, there is a slight increase in the frequency, above the general average, of postoperative symptoms if the ovaries are removed. This suggests the possibility of some associated change, possibly toxic in nature, which tends to impair the compensatory mechanism of the individual or render the equilibrium more unstable.

The average age in this group was 30 years. No woman was operated on while the pelvic inflammation was acute. Surgical treatment was instituted only to correct the chronic residual pathologic result of the various types of pelvic infection.

The type of tissue retained has a bearing on symptoms, as shown by Table 12.

TABLE 10—*Relation of Fibroids to Vasomotor Symptoms*

	Number of Cases	Symptoms Per Cent	No Symptoms Per Cent
Hysterectomy with removal of ovaries	108	88 (30% severe)	12
Hysterectomy with retention of ovaries	79	48 (11% severe)	52
Total	187		

In no instance have remnants of ovaries or glands buried in adhesions been preserved for it was felt that such diseased tissue is a liability to the patient. Oophoritis of slight degree did not impair the ovarian function, sclerotic ovaries, indicative of senility, on the other hand, were definitely less effective in protecting the individual.

Postoperative vaginal atrophy was not of frequent occurrence in our patients. To lessen the possibility of contracture of the vagina, plastic work was rarely combined with hysterectomy. Atrophic changes were found in women with and without ovarian tissue in a frequency of 2 per cent and 4.5 per cent, respectively.

TABLE 11—*Relation of Pelvic Inflammatory Disease to Frequency of Vasomotor Symptoms*

	Number of Cases	Symptoms Present Per Cent	Absent Per Cent
Hysterectomy with removal of ovaries	165	76	24
Hysterectomy with retention of ovaries	29	56	44
Total	194		

VALUE OF CONSERVED TISSUE AND INCIDENCE OF DEGENERATION

The data obtained from our tribulations indicate that retention of ovarian tissue is a distinct advantage to the patient. Yet, before conclusions can be drawn, it is essential to determine whether or not the value of the tissue is counterbalanced by its tendency to cystic or neoplastic changes.

In 171 patients with conserved ovaries, the ovaries were subsequently found to be enlarged in only twelve. This was associated with pain in two cases. That this was a temporary condition, however, is shown by the spontaneous disappearance of pain and swelling within six months. We found no neoplastic degenerations, and there were no secondary operations in the entire series.

It has been suggested that if cystic degeneration is an indication of ovarian atrophy, the infrequency of

this finding in comparison with the frequency of vasomotor disturbances would indicate that the endometrium is the controlling factor in these disturbances. We do not agree with this statement, however, for the close similarity in frequency of disturbances of the normal menopause and surgical menopause with retained ovaries indicates that the absence of the endometrium does not materially affect the issue. While it is apparent that the ovaries may cease to function after a short period, yet the slow atrophy of the glands and the gradual withdrawal of the secretion permit a smoother metabolic adjustment.

It is logical to assume that the fate of the retained ovary is intimately associated with its blood supply, therefore, we have rarely removed a tube and saved the corresponding ovary, because such a procedure would jeopardize the circulation. Salpingectomy was done eighteen times, with retention of ovarian tissue. The series is too small to be of any value.

OVARIAN THERAPY

It has been a routine to give ovarian therapy by mouth within two weeks after operation and to continue the administration for the duration of the menopausal disorders, because the value of the therapeutic principle involved was recognized. It is difficult to draw conclusions as to the value of this agent in the treatment of the vasomotor phenomena associated with the menopause because the symptoms are entirely subjective and vary

TABLE 12—Relation of Type of Retained Ovary to Vasomotor Disturbances

	Number of Cases	Disturbance Per Cent	No Disturbance Per Cent
Normal ovaries	109	31	69
Ovaries with adhesions	33	32	68
Sclerotic ovaries	29	63	37

in different individuals, and data as obtained do not permit of statistical tabulation. If we assume the presence of a therapeutic principle in the gland, however, it would seem logical, especially when both ovaries have been removed, to supply this principle in an effort to control the disturbances resulting from the loss of ovarian influence. The whole gland has usually been prescribed, for, in the absence of definite standardization and identification of the essential principles, it was considered more rational to administer the whole gland than any of its parts. Various preparations of corpus luteum and ovarian residue have been given, in the absence of control of vasomotor disturbances by the whole gland, with no conclusive effects as to their superiority. More than 80 per cent of women with total ablation, despite gland therapy, developed functional disturbances. However, it is my impression that frequently these symptoms were alleviated and controlled by the extract, as shown by an increase of the symptoms following withdrawal of therapy.

CONCLUSIONS

If we accept the normal menopause as a control, my analysis indicates that

1 The frequency of vasomotor symptoms after hysterectomy is increased when both ovaries are removed.

2 The frequency of symptoms with conserved ovaries after hysterectomy compares favorably with that of the normal menopause.

3 Severe vasomotor symptoms are more common without than with ovaries.

4 The onset of delayed symptoms indicates that a definite number of conserved ovaries will atrophy within a year after operation.

5 The average duration of symptoms of the normal and surgical menopause is about two and one-half years.

6 Women with low hemoglobin are more likely to develop postoperative disturbances.

7 The frequency of symptoms depends in large measure on the type of tissue retained.

8 Retained healthy ovaries are not susceptible to degeneration.

ABSTRACT OF DISCUSSION

ON PAPERS OF DR. PHANEUF AND MAXWELL

DR. EMIL RIES, Chicago. The results reported by Dr. Maxwell are not greatly different from what we have believed for many years. We considered it a rule not to remove healthy ovaries. The necessity of operating subsequently on those ovaries has not been evident. Dr. Phaneuf's paper brings up interesting questions. For instance, he reports cases in which the tumor ruptured during or soon after examination. A few years ago I reported a type of tumor that I designated alternating periodic swellings of the ovary that were enlargements of the ovary due to a pathologic condition of the corpus luteum speaking in general terms. These tumors are liable to break under the hand of the examiner and are liable to give him quite a little palpitation of the heart for a while. They are not usually associated with the collapse symptoms which Dr. Phaneuf described for hemorrhage because there is usually no hemorrhage from them. The cases that Dr. Phaneuf described have hemorrhage and therefore manifest the symptoms of internal hemorrhage. There are a good many cases in which a diagnosis of these internal hemorrhages could be made more easily by puncturing the culdesac. Dr. Phaneuf did not mention that because evidently in most cases there was no question in the operator's mind as to whether there was any internal hemorrhage or not. I do not know that practically, it matters much whether we have to operate for acute appendicitis or for ruptured ovarian cyst. But as a matter of scientific interest it is quite important. The rupture of these cysts is interesting further with regard to the relation of menstruation to the corpus luteum. The more we know and the more we experiment about the function of the corpus luteum the more chaotic the condition becomes. What we were taught by the Born-Fraenkel theory years ago is shaken on every point. We know less about it today than we did ten years ago because we know so much more. It is very important to bring such problems before a meeting like this because it stimulates all of us if we meet such a case to take a very careful history of the type of menstruation before and after the rupture and the greater the number of such cases published, the more we shall learn about this important function of the corpus luteum.

DR. CAREY CULBERTSON, Chicago. The diagnosis of ectopic pregnancy, for instance, is not as satisfactory as diagnosis goes in general practice. Dr. Phaneuf's paper is of value in the diagnosis of this pathologic entity. Regarding Dr. Maxwell's paper there are as I see it two distinct tests clinically of ovarian efficiency in the normal situation: one is pregnancy, the other is menstruation. We eliminate those two by the ablation of the uterus and what test of ovarian efficiency have we left? We have left the question as to whether or not the patient develops climacteric symptoms. Any one who has studied menopause cases intensively must realize that there is nothing more protean in its manifestations than the climacterium. Some women have no symptoms at all, some show a moderate reaction, some a marked reaction. Some perhaps the majority develop vasomotor disturbance and others have just as definite climacteric symptoms hypotonic in type and without vasomotor disturbance. If we take up the study of such cases as Dr. Maxwell has after hysterectomy, we have nothing much to go on as far as the efficiency of the ovary is concerned except these symptoms, hence any such study must be more or less imperfect. As a matter of fact, the

vasomotor symptoms are the ones that are recognized universally as evidences that the ovaries are deficient. Aside from this, it is extremely difficult to say from a study of the symptoms the patients exhibit, whether they mean ovarian efficiency or not. This report brings out certain opinions that I have arrived at from my own work. I was particularly interested to note that there was a relative absence of cystic degeneration of the ovaries left behind after hysterectomy. We have been told by clinicians that the ovaries should not be left behind because they will undergo cystic degeneration and produce symptoms that will necessitate another operation. That has not been my finding at all. I have been one of those who has advocated ovarian conservation, certainly in young women and at times in older patients. There are two things about the situation that should obtain when we preserve the ovaries. Dr Maxwell said that the most important thing is the condition of the ovary, that the diseased ovary should be ablated, and the good one left. The other important thing is the vascularization of the ovary that is left behind. If the vascularization of the ovary cannot be preserved, it is better to remove it. For this reason, I have not made it a rule to take the ovary out and transplant it elsewhere but have preferred to leave it in situ with its normal blood supply. If it has any chance to function, it can do this best with its own blood supply in its normal situation in the pelvis.

DR EMIL NOVAR, Baltimore. When a surgeon finds a woman's abdomen full of blood, his first thought is of a ruptured extra-uterine pregnancy, and almost always this assumption is correct. Occasionally, however, the bleeding is due to other causes, such as the one that Dr Phaneuf has discussed. The ovary is more frequently the seat of hemorrhages within its substance than any other organ in the body, and it is, therefore, surprising that abdominal hemorrhage of ovarian origin is not more frequent than it is. Just as the endometrium is the source of a physiologic type of hemorrhage, i. e., menstruation, so we find that at a certain phase of its cycle—the vascularization stage—the corpus luteum gives rise to a physiologic hemorrhage. At times, this is abnormally great, and may even break through into the abdominal cavity. A considerable number of cases arise from follicular cysts. In a study of ovarian hematomas that I made some years ago, I found that the bleeding in the common follicular hematoma arises from blood vessels surrounding each follicle—the subgranulosa vascular wreath, as we termed it. The blood breaks through the wall of the follicle into its cavity. It may, however, just as readily break through into the abdomen. This is especially likely under the influence of traumatism, such as rough bimanual examination.

DR ARTHUR H. CURTIS, Chicago. In those instances in which ovarian conservation has been practiced, has Dr Maxwell noted any difference in menopause symptoms in patients who have been subjected to supravaginal hysterectomy as contrasted with complete hysterectomy?

DR HENRY T. BYFORD, Chicago. In order to understand the second paper more thoroughly, we ought to know how often these symptoms occur in normal women. In the women members of my family and many others under continuous observation, there have been no symptoms of the menopause. If we knew whether or not normal symptoms occur more often before than they do after operation, and whether they were more severe, or less severe in proportion to the normal condition, we should have a better understanding of the paper.

DR L. E. PHANEUF, Boston. I want to emphasize the point made by Dr Ries regarding vaginal puncture. Out of seven cases seen within a year, there were two cases of collapse with severe hemorrhage. In these two cases, puncture would not have been necessary because the abdomen contained a great deal of blood. Operation was necessary, and vaginal puncture would not have helped very much as far as the result was concerned, but it might have helped in making the diagnosis. The second case with massive hemorrhage occurred in a physician, living seventy-five miles from Boston, who had made her own diagnosis of ovarian cyst with twisted pedicle and called me on the telephone asking me to come and operate. She was also seen by a surgeon who made a diagnosis of appendical abscess. This woman had half a liter of blood

in the abdomen. In the other cases, my own and those found in the literature, hemorrhage was not suspected, and they were diagnosed as cases of appendicitis. There, vaginal puncture would have been of great help in settling the diagnosis.

DR ALICE MAXWELL, San Francisco. I should like to assure Dr Ries that we have arrived at our conclusions in every case by repeated physical examinations as well as by questionnaires that tabulated subjective symptoms. An explanation of the absence of menopausal disturbances in the doctor's two relatives is afforded by repetition of the frequency of these symptoms in normal women, namely, 50 per cent. His relatives are undoubtedly in the fortunate group of those who are symptom free. We have recognized the importance of the ovarian circulation in relation to the maintenance of ovarian function, and if the pathologic change in the tube was so extensive as to require salpingectomy, we practically never conserved the corresponding ovary because of the damage to its blood supply. We have also made every effort to support the retained ovary so as to avoid twisting the blood vessels. In answer to Dr Curtis's question, I should say that we have found no difference in the frequency of vaginal atrophic changes or vasomotor disturbance after panhysterectomy or supravaginal removals, although the statement is frequently made that circulatory changes are more marked in the former than in the latter.

TREATMENT OF NEPHRITIS AND EDEMA WITH CALCIUM*

NORMAN M. KEITH, M.D.
CHARLES W. BARRIER, M.D.

AND
MARY WHELAN, B.A.
ROCHESTER, MINN.

The action of calcium salts in the organism has been widely discussed, a debatable point being whether or not diuresis occurs after their ingestion. In 1911, Meyer and Cohn¹ found that a certain amount of calcium chlorid added to the food of infants caused a decrease in weight, due to loss of water. They stressed the importance of using a comparatively large amount of calcium chlorid if loss of water was to be produced. On the basis of these observations, Schultz,² in 1918, gave doses of 10 gm of calcium chlorid daily to patients suffering from war nephritis, and in several cases prompt diuresis and disappearance of edema occurred. In 1922, Blum³ reported like results in similar cases, but he found also that with the disappearance of the edema there was a large output of sodium in the urine. As it is known that sodium salts cause retention of fluid in the body, this finding convinced him that sodium was the important substance in the causation of edema and must necessarily be eliminated with the subsidence of the edema.

A year later, Atchley, Loeb and Benedict⁴ studied the electrolytic partition in the blood and urine of a normal man following calcium chlorid ingestion. They noted increased excretion of water, sodium, total acids, chlorine and ammonia in the urine. At the same time, Haldane, Hill and Luck⁵ published results showing that

* From the division of medicine Mayo Clinic.

Read before the Section on Pharmacology and Therapeutics at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

¹ Meyer L F and Cohn S. Klinische Beobachtungen und Stoffwechsel Versuche über die Wirkung verschiedener Salze beim Säugling. *Ztschr. f. Kinderh.* 2: 360-419, 1911.

² Schultz E. Klinische Beobachtungen über Nierenentzündung bei Kriegsteilnehmern. *Ztschr. f. klin. Med.* 80: 111-138, 1918.

³ Blum L, Abel E and Hausknecht R. L'action diurétique des sels de calcium dans la nephrite avec oedemes. *Bull. et mem. Soc. med. d'hop. de Paris* 46: 206-214, (Feb.) 1922.

⁴ Atchley, D. W., Loeb R. F. and Benedict E. M. Physico-chemical Studies of Calcium Chlorid Diuresis. *J. A. M. A.* 80: 1643-1644 (June 2) 1923.

⁵ Haldane J. B. S., Hill R. and Luck J. M. Calcium Chloride Acidosis. *J. Physiol.* 57: 301-306 (June) 1923.

the diuresis produced by calcium chlorid in a normal man was accompanied by an acidosis, which was indicated by a lowered alveolar carbon dioxide tension and increased urinary excretion of acid and ammonia.

In a recent paper, Rockwood and Barrier⁶ of our service confirmed the results obtained by Schultz and Blum in the treatment of nephritis and nephrosis, and further demonstrated that calcium chlorid was efficacious in many cases in which calcium lactate failed to produce diuresis. We shall discuss here results

the erythrocytes numbered 3,840,000. A diagnosis was made of subacute glomerular nephritis.

The patient returned for reexamination four months later, June 4. He had remained free from edema and had gained in health and strength. He appeared strong and healthy in every way. He weighed 70 kg., without edema. The systolic blood pressure was 140 and the diastolic 80. The eyegrounds were greatly improved, the only lesion being a few small exudates of the absorbing edema type in the left fundus. The erythrocytes numbered 3,600,000, the hemoglobin (Dare) was 65 per cent. The urine contained albumin, 2, numerous casts

TABLE 1—Findings in Blood, Urine, Feces and Edema Fluid

Date	Blood Serum Mg for Each 100 C c					Carbon Dioxide Plasma per Cent by Volume	Urine Total Milligrams					Hydrogen Ion Concentration	Feces Total Milligrams				Edema Fluid Mg for Each 100 C c				
	Chlorin	Sodium	Potassium	Calcium	Magnesium		Volume C c	Chlorin	Sodium	Calcium	Magnesium	Potassium	Sodium	Calcium	Potassium	Magnesium	Chlorin	Sodium	Potassium	Calcium	Magnesium
7/18/23	360	316	20	8.0	4	42											40*	2.2	17*	6*	1.9
1/6/24							700	798	1,034	10.0	8.4	1.613	76	408	327	124					
1/8/24							1,300	1,560	1,870	11.7	15.6	1.620		153	509	539	90				
1/9/24							1,500	6,840	2,438	64.0	70.0	2.347	4.6	143	1,062	532	127				
1/13/24							2,200	9,780	2,895	59.0	29.0		4.6	217	2,918	613	613				
1/14/24							2,200	10,860	3,449	110.0	29.0	2.684	4.6	206	948	342	139				
1/15/24																					
1/16/24	360	329	15.9	9.8	1.9	45											411	32.0	15	7.5	1.03

* Ascitic fluid

obtained in two cases in which the balance of certain of the inorganic ions was determined.

REPORT OF CASES

CASE 1—History—A man aged 22, a surface-mine laborer, came to the Mayo Clinic Nov. 28, 1923, complaining of extreme generalized edema, which had begun nine months before. His only other illnesses had been measles in 1915 and influenza in 1918, from both of which he had completely recovered. Nine months before, he had caught cold and was confined to bed. On the fifth day, severe pain developed in the left lower quadrant and radiated around to the left renal area, lasting two days. A week later, after the patient was up and around, puffiness under the eyes and swelling of the feet were noted, this was followed by increasing generalized edema, which was partially relieved by hospitalization but became marked when he returned home. In May, he went to another hospital, where, shortly after going to bed, he had a convulsion and was unconscious for three days. Abdominal paracentesis was performed. The edema, in spite of vigorous treatment, was not relieved, but increased until the patient came to the Mayo Clinic.

The patient's skin was waxy white and all parts of his body were edematous. The abdomen and scrotum contained so much fluid that he was unable to stand, there was also a large quantity of fluid in both pleural cavities. His weight was 92.7 kg., in health he weighed 72.7 kg. The heart was moderately enlarged and there was an accentuated aortic second sound. The systolic blood pressure was 205 and the diastolic 125, the pulse rate was 72. There was a low grade edema of the disks and retinas with scattered exudates but no hemorrhages. A twenty-four hour specimen of urine measured 500 c.c., the specific gravity was 1.020, albumin 3, many hyaline and granular casts and a few pus cells were present, but no erythrocytes. The two hour phenolsulphonephthalein return was 25 per cent, the blood urea was 56, creatinin, 2, and hemoglobin (Dare) 60 per cent, with 3,160,000 erythrocytes and 9,800 leukocytes. The total serum protein was 4.9 gm., the globulin and albumin being 29 per cent and 71 per cent, respectively. At the time of the patient's dismissal he was free from edema, the systolic blood pressure had dropped to 140, and the diastolic to 90, the blood urea, creatinin and carbon dioxide combining power were normal and the two hour phenolsulphonephthalein return had risen to 80 per cent. The hemoglobin (Dare) was 65 per cent and

and a few erythrocytes and leukocytes. The blood urea and creatinin were 43 and 18 mg., respectively. The phenolsulphonephthalein excretion was 45 per cent in two hours.

Treatment and Course—During the first eleven days in the hospital, the patient was purged, having as many as six stools a day, and he was sweated vigorously. His weight decreased 22 kg., and the urine never exceeded 500 c.c. For the next seven days he was given 18 gm. of calcium chlorid daily. There was no decrease in weight, but the urine reached 900 c.c. a day. While the urinary output nearly doubled, it was not a diuresis, but as purgation had been brisk, the calcium chlorid may have passed largely unabsorbed (Chart 1). At the end of the seven days, 8,000 c.c. of fluid was drawn from the abdomen thereby reducing the weight to 80.4 kg. The calcium

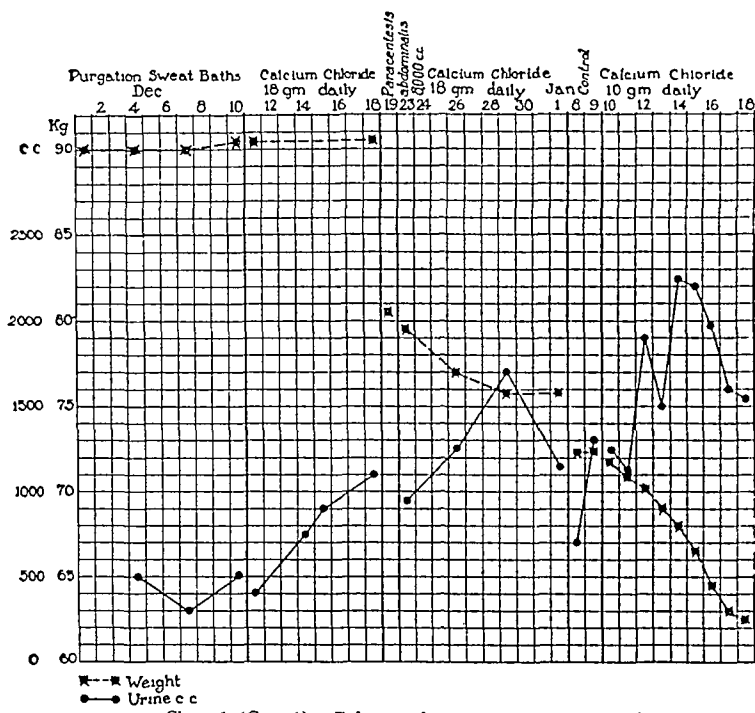
TABLE 2—Findings in Blood, Urine and Feces

Date 1924	Carbon Dioxide Plasma per Cent by Volume	Blood Serum Mg for Each 100 C c				Urine Total Milligrams				Ammonia	Hydrogen Ion Concentration	Feces Total Milligrams	
		Sodium	Chlorin	Sodium	Calcium	Volume C c	Chlorin	Sodium	Calcium			Calcium	Sodium
2/22						750	2,970	1,233	13.5	330	6.7		
2/23						2,040	6,560	4,075	45.1	577	7.3	2,214	3,143
2/24						1,240	3,750	2,000	30.0	221	7.7		
2/25	62	377	3.4	9.0		550	1,818	1,170	10.4	131	6.9		
2/26						1,400	9,540	5,497	15.3	783	6.4		
2/27						1,700	10,670	3,902	29.2	714	5.4	5,400	5,350
2/28						1,100	7,920	2,207	26.3	8.2	5.0		
2/29	50	3.2	291	8.5		8.0	5,814	1,476	240.6	620	5.0		

was discontinued for four days, then given for ten days, during which period there was a loss in weight of 3.6 kg., and the daily urinary output reached 1,700 c.c., the fluid intake being 600 c.c. plus the fluid contained in a diet of 1,500 calories. Enemas were substituted for the purgatives but were found unnecessary and discontinued. Because of the drop in the carbon dioxide combining power of the blood to 36 per cent alkali was given, and as soon as the urine became alkaline the urinary output fell to 650 c.c. and the weight was stationary. Nine days after the discontinuance of the calcium chlorid, it was begun again, 10 gm. daily being given. For a control period of two days before and during the calcium regimen, the patient was put on a carefully weighed diet of 1,500 calories, containing 40 gm. of protein and 800 c.c. of water,

6 Rockwood, Reed and Barrier: C. W. Calcium Treatment for Edema, Arch. Int. Med. 33: 643-657 (May) 1924.

600 cc additional fluid was also allowed. In this diet, the content of calcium, magnesium, potassium, sodium, phosphorus and chlorin was calculated according to Sherman's figures.⁷ The treatment with calcium chlorid was continued for nine days, and for this period the loss in weight was 96 kg, the urine rising to 2,200 cc in twenty-four hours. The inorganic balance was determined for the last three days of this period.



(Table 3) After the discontinuance of the calcium, the urine decreased somewhat in amount, but remained highly acid. The loss in weight with gain in strength continued slowly, in spite of a high caloric diet, so that at the end of sixty-five days the patient weighed 55.4 kg, as against 92.7 on admission.

CASE 2—History.—A woman aged 21, came to the Mayo Clinic Feb. 18, 1924, because of generalized edema. Except for tonsillitis, she had had no illnesses other than the edema, which had begun after an attack of diphtheria seven years before, accompanied by trouble with the vision and the urinary findings of acute nephritis. Since then, albumin had been present in the urine, the edema had subsided, but returned a number of times to subside again with diet, rest and sweating. The edema on admission, was greater than on previous occasions and had been present for several weeks.

The patient's face was puffy about the eyes and the skin of the whole body was edematous, this condition being most marked in the lower part of the legs, over the sacrum, the inner surface of the thighs, and the anterior wall of the chest. There was no evidence of fluid in any of the serous cavities. Her weight was 77.7 kg, in health it was 71.8 kg. The eye-grounds were normal, the tonsils were large and septic in appearance and the heart was enlarged to the left. The systolic blood pressure was 140 and the diastolic 110. The specific gravity of the urine was 1.027, and it contained albumin 4, numerous casts and a few pus cells, but no erythrocytes. The hemoglobin (Dare) was 76 per cent, the erythrocytes numbered 4,600,000 and the leukocytes 7,500, the blood urea was 16 mg, and the blood creatinin 12 mg for each 100 cc. A diagnosis was made of subacute nephrosis. After eight days of treatment in the hospital, the patient's weight decreased 8.6 kg, she was then free from edema, save for slight pitting over the lower part of the tibiae. At this time, the two-hour phenolsulphonephthalein return was 75 per cent, and the renal function was normal save for albumin and casts. Tonsillectomy

was then performed. A letter from the patient three months after her dismissal states that there is no edema, and that her weight is 68.2 kg.

Treatment and Course.—The second day in the hospital, the patient was placed on a weighed diet of 1,500 calories, containing 40 gm of protein, 800 cc of water, and as little salt as was possible. She was allowed an additional 600 cc of fluid, and was kept on this diet for four days as a control, during which time she lost 3.1 kg, and the output of urine rose rapidly, but subsequently declined until, on the fourth day, it amounted to only 550 cc. She was then given 10 gm of calcium chlorid for four days. There was a sustained diuresis with a loss of 4.1 kg in weight, which brought her to her normal weight and freed her from edema, save for a slight pitting over the lower end of the tibiae (Chart 2).

COMMENT

At the time these two patients were observed, they presented marked general edema. Their conditions had been diagnosed clinically as subacute glomerular nephritis and subacute nephrosis, respectively. Both had ultimately a very satisfactory diuresis produced by calcium chlorid. In Case 1, the edema was very resistant to other reduction methods, and did not yield even to calcium at the first trial. In Case 2, the edema was reduced satisfactorily, at first without administering calcium chlorid, but within three days the diuresis had definitely slackened. At this time, the calcium was started, apparently greatly shortening the period of edema, as the disappearance of the edema was accelerated. At the end of the diuresis, both patients were much below their normal weights and both had normal renal function, the two-hour phenol-

TABLE 3—Analyses Showing Inorganic Balance

	Cal cium Mg	Chlorin Mg	So dium, Mg	Potas sium Mg	Magne sium Mg	Water Cc	Loss of Weight, kg
Two days control							
Intake							
Diet	590	694	740	5156	413	2,800	
Medication							
Total	590	694	740	5156	413		
Output							
Urine	22	2,390	2,874	3,433	24	2,000	
Feces	918		234	916	329		
Total	940	2,390	3,108	4,349	353		1
Balance	-350	-1,696	-2,368	+810	+60		
Three days on en- cium chlorid 10 gm daily							
Intake							
Diet	811	1,054	864	7,509	636	4,000	
Medication	11,070	18,930					
Total	11,881	19,984	864	7,509	636		
Output							
Urine	233	27,460	8,763	5,031*	179	5,000	
Feces	4,973	708	768	1,387	880		
Total	5,166	28,168	9,541	6,418	1,069		4.5
Balance	+6,725	-8,204	-8,677	+1,141	-373		

* Two days

sulphonephthalein output in Case 1 was 80 per cent, and in Case 2, 75 per cent, but albumin and casts were still present in the urine and the specific gravity was relatively high.

In Table 1 are noted the findings of the inorganic constituents in the blood serum, the carbon dioxide com-

⁷ Obviously these figures are not as accurate as if the food had been analyzed. However the inaccuracies are too small to affect the general results.

binding power of the plasma, the volume and hydrogen-ion concentration of the urine, and the inorganic ions in the urine, feces, ascitic fluid and edematous fluid in Case 1 during a control period of two days, during which the patient was on a weighed diet of 1,500 calories, containing 40 gm of protein and 1,400 cc of fluid, and during a test period of three days on the same diet plus 10 gm of calcium chlorid daily, given

TABLE 4—Analyses Showing Inorganic Balance

	Calcium Mg	Chlorin Mg	Sodium Mg	Water Cc	Loss of Weight Kg
Four days control					
Intake					
Diet	1 150	1,203	1 443	5 600	
Medication					
Total	1 150	1,203	1 443		
Output					
Urine	09	15 093	8,844	4 600	
Feces	2 214		3 143		
Total	2 213	15 093	11 987		3.2
Balance	-1 163	-13 890	-10 494		
Four days on calcium chlorid 10 gm daily					
Intake					
Diet	1 216	1,578	1 527	5 600	
Medication	14 760	2,940			
Total	15 976	27 063	1,527		
Output					
Urine	9.9	33 894	13 081	5 100	
Feces	5 400		5,340		
Total	6 3.9	33 894	18 421		5.2
Balance	+9 615	-6,836	-16 904		

by mouth. In Table 2 are noted the same findings for Case 2, except that both control and test periods are for four days. In this diet, the inorganic ions were calculated according to Sherman's⁸ values. In Table 3 are noted the balance of inorganic ions, the amount of water in the diet and in the urine, and the loss in weight for the control and test periods in Case 1. In Table 4 the same data are given for Case 2.

After calcium ingestion, the only change noted in the inorganic cations of the blood serum was a moderate decrease of sodium in the second case. In neither case did calcium chlorid alter the carbon dioxide combining power of the blood plasma, although the hydrogen-ion concentration of the urine dropped in Case 1 from 7.6 to 4.6, and in Case 2 from 6.7 to 5. There was an excess excretion of ammonium during the treatment with calcium chlorid. In both cases, during the control period, there were negative balances for calcium, chlorin and sodium. This negative balance for chlorin and sodium was much more marked in Case 2 than in Case 1, and in neither was there a proper proportion between the chlorin and the sodium ions, if calculated as sodium chlorid. The sodium was in excess, and was probably excreted as a salt of some other acid. In Case 1, in the control period, there was a positive balance of potassium, which was due in part to the fact that this was the only ion present in the diet in adequate amounts. In the test periods in both cases, when calcium chlorid was given, there was a positive calcium balance, 67 gm in Case 1 and 96 gm in Case 2. The negative balance of chlorin was increased from 1.6 gm in the control period to 8.2 gm in the calcium period in Case 1, and, while there was still a large negative balance for chlorin in Case 2, it was decreased from 13.8 to 6.8 gm. The negative sodium balance in Case 1 was increased from 2.36 to 8.67 gm,

while in Case 2 there was an increase of from 10.4 to 16.9 gm. The loss of water through the kidneys increased in both cases when calcium chlorid was given, but the resulting diuresis was not sufficient to account for the actual loss of weight. This was evidently due to increased loss of water by other channels, such as the skin, lungs and bowel. We have noted that, while calcium is being given, any tendency to constipation is relieved, and also that this effect continues long after its exhibition has ceased. These facts would indicate that, on administration of calcium chlorid, water is more readily available for excretion. After the ingestion of calcium chlorid, the calcium and sodium content of the feces is increased.

After calcium chlorid has been given, there is a positive balance of calcium and a negative of chlorin and sodium. There is increased excretion of ammonium. The hydrogen-ion concentration of the urine is lowered, the urinary output increased, and the loss of weight is out of proportion to the loss of water through the kidneys. The carbon dioxide of the plasma was not changed, although in Case 1 when calcium chlorid had been given for a longer period the carbon dioxide of the plasma was lowered. The foregoing is in essential agreement with the results of Haldane, Hill, Luck and Atchley, Loeb and Benedict.

ACTION OF CALCIUM CHLORID

Blum and his co-workers have explained the diuretic action of calcium chlorid by its effect on retained sodium. They believe edema is due to sodium retention. Calcium, as well as potassium, provokes a loss of sodium, which carries with it water. The loss of sodium is due to the antagonism between the cations, no importance is attributed to the anion chlorin. They emphasize the fact that calcium chlorid has a greater diuretic effect when all sodium salts are withheld. In our cases, there was a large sodium loss, both by kidneys and bowel, with a retention of calcium. The fact that Atchley, Loeb and Benedict found sodium retention after a calcium chlorid diuresis emphasizes the importance of calcium chlorid in removing sodium from the organism. From the evidence at hand, it seems logical to assume that after the ingestion of calcium chlorid, the calcium is eliminated by the bowel, while the chlorin is absorbed, becomes attached to the retained sodium, and passes into the urine, allowing the escape of water.

Hulse⁹ interprets the discharge of edema fluids as being due to the diminution in the water-binding power of colloids, which is caused by the bivalent cation calcium. The bivalency at least would not explain the diuresis of almost similar type produced by potassium and ammonium chlorid.

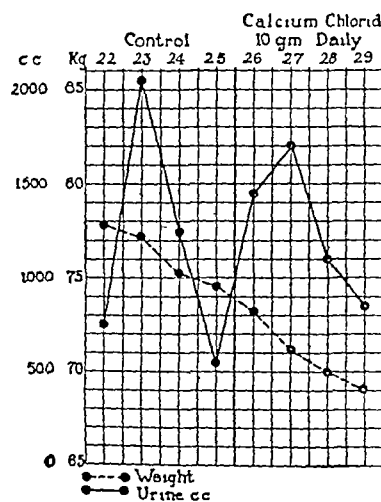


Chart 2 (Case 2) — Relation of urine volume to weight loss

⁸ Sherman H C. Food Products. New York: the Macmillan Company, 1921.

⁹ Hulse W. Ueber den Einfluss der Kalksalze auf Hydrops und Nephritis. Zentralbl f inn Med 41: 441-454 (June 19) 1920.

Haldane and his co-workers, in studies of the acidosis of calcium chlorid origin, noted the diuresis, the fall in the alveolar carbon dioxide, the increased excretion of sodium, ammonium, and the total acids of the urine, with a reduction in its hydrogen-ion concentration. Calcium chlorid is an acid salt, and when taken by mouth, the calcium passes through the bowel as calcium carbonate, and the chlorine is absorbed as hydrochloric acid, producing acidosis. These observers offer the theoretical explanation that the diuresis is due to the acidity whereby the blood and tissue proteins are brought nearer the iso-electric point, releasing cations held in Donnan equilibrium, diminishing osmotic pressure, and causing loss of water. On this basis, they predicted a similar diuretic action for ammonium chlorid as the ammonia is converted to urea, liberating the chlorine as hydrochloric acid.¹⁰ We are now treating a case of marked nephrotic edema with ammonium chlorid. The diuresis and loss of weight have been very satisfactory, and the blood and urinary findings of acidosis are quite similar to those in the cases in which calcium was used. The carbon dioxide combining power of the plasma has dropped to 25 per cent, and the hydrogen-ion concentration of the urine has fallen from 7.2 to 5.0.

The action of calcium and ammonium chlorid as diuretics, in cases of nephritis with edema, may be due in part to a change in the acid-base equilibrium of the body, causing the tissues to liberate water for excretion by the kidney, or causing a change in the damaged kidney so as to permit the excretion of water and salts. That acidosis is not the only cause for starting diuresis is indicated by the presence of acidosis with oliguria for a considerable period in Case 1 of this series, and in certain cases of war nephritis reported by Keith and Thomson.¹¹ The antagonistic action of the individual cations and a possible specific dehydration effect must receive due consideration.

It is evident that, in the edema of nephritis, the administration of such salts as calcium chlorid and ammonium chlorid leads to a separation of the cation and the anion within the organism. With the ingestion of either, sodium may be discharged from the body in large amounts.

SUMMARY

In two cases of nephritis with edema, calcium chlorid caused diuresis and loss of edema. A study of inorganic ions during the diuresis shows a positive balance of calcium and a negative balance of chlorine and sodium. When calcium chlorid is ingested, calcium is eliminated by the bowel, and chlorine by the kidney. In certain cases, sodium is discharged in large amounts and water is made available for elimination, and is excreted.

ABSTRACT OF DISCUSSION

DR PAUL D WHITE, Boston. In the last year at the Massachusetts General Hospital, we have treated but one case of nephritis with edema and that without success. Our first case treated with calcium chlorid was about a year ago, a patient with very severe heart disease and obstinate edema. After other diuretics had failed to have any effect, the administration of calcium chlorid caused a satisfactory diuresis, and undoubtedly prolonged life for several months. Last fall Dr Harold Segall began an investigation on the effect of calcium chlorid. He found that he was able to produce

diuresis in cardiac cases with or without edema, particularly when the patients were in bed and controlled with digitalis as indicated. We found no change in the rate or depression of the T wave in the electrocardiograms of patients with normal rhythm, auricular fibrillation or flutter, following the administration of calcium chlorid. It is known that digitalis will depress the T wave in the electrocardiogram. We tried calcium chlorid in a few cases of pleurisy with effusion, and were unable to produce results.

DR L G ROWNTREE, Rochester, Minn. What impressed me the most in regard to the value of calcium was that it was most effective in cases in which other procedures failed. I have watched these cases in Dr Keith's service. The effects have been very striking. The types of edema that are often the most resistant to treatment yielded readily in several instances. Not all varieties of edema are the same, so far as blood volume is concerned. The usual conception of edema involves hydremic plethora. Dr G E Brown and I have studied blood volumes in various types of edema and have found that the edema of chronic diffuse glomerular nephritis is associated with a small blood volume rather than a large one. Anemia is also usually present. The work of Keith and Barrier indicates that an excessive calcium administration robs the body of sodium. The control of sodium is more important in edema than the control of chlorides. This study is opening up some new vistas in the picture of edema. From what I have seen personally, I would predict that calcium is going to play an important role in the treatment of edema. Perhaps Dr Keith will outline more definitely the treatment particularly in regard to the preparation used, dosage, and method of administration.

DR C W GREEN, Columbia, Mo. Among the agents that have recently come to the front is calcium. It is very gratifying to see pathologists use the drugs that have been advocated by pharmacologists.

DR NORMAN KEITH, Rochester, Minn. In regard to the daily dose of calcium chlorid, we have found 10 gm usually effective though in a certain number of cases we used 18 gm. In going over the literature carefully, I found that there are now about twenty cases of authentic nephritis with edema that have responded to medication by calcium chlorid in this remarkable way. I know of no case in which ammonium chlorid was given and diuresis was produced except the one I quoted. I might say that in every case the hydrogen ion content of the urine does increase as I showed in these tables. In some cases, we had spontaneous diuresis, as I showed. We do not know what is the spark that started this marked diuresis but it does occur in cases in which the patients are getting a small intake of fluid and salt and no drugs. In these cases there was no change in the hydrogen ion concentration in the urine, which is like the diuresis that one gets after a large ingestion of water. This I think, is of interest. On the other hand, after calcium chlorid we get this change in the hydrogen ion concentration with increased excretion of sodium. In response to Dr Rowntree's request, we find it difficult to give calcium chlorid in solution. Blum and others who have used it have always given it in from 10 to 20 per cent solution. We found it much more satisfactory in capsules. The patient had no trouble in taking it, and I think that we induced diarrhea in only one case. It is interesting in this connection that ammonium chlorid is more easily taken than calcium chlorid, and it is possible that ammonium chlorid may be more easily taken and perhaps become of more general use than calcium chlorid.

Outpatient Department in Health Program—The outpatient department is important in the health program because it sees patients in the early or incipient stages of disease. This is the stage in which, from the health point of view, it is most important for patients to be under medical observation. This is the time when treatment is most conclusive of results. It enables one to prevent the spreading of infection to others, as in typhoid or tuberculosis, to give satisfactory treatment and prevent handicap, as in heart disease or infantile paralysis, and to save life, as in diphtheria and cancer.—Smith, *R M Hosp Social Service* 10 23 (July) 1924.

¹⁰ Haldane J B S. Experiments on the Regulation of the Blood's Alkalinity. *J Physiol* 55: 265-275 (Aug.) 1921.

¹¹ Keith, N M and Thomson, W D. War Nephritis. *A Clin. Functional and Pathological Study*. *Quart J Med* 11: 229-266 (April) 1918.

THE VALUE OF VOLUME INDEX IN THE DIAGNOSIS OF PERNICIOUS ANEMIA¹

RUSSELL L. HADEN, MD
KANSAS CITY, MO

A color index greater than 1, when correctly determined, is usually regarded as the most constant and characteristic blood finding in pernicious anemia. The great variation in hemoglobin readings in different laboratories, however, makes the color index a very uncertain diagnostic measure. The plus index is dependent on a macrocytosis of the red cells. It is apparent that an accurate measure of the macrocytosis is a more basic procedure than the determination of the color index. The increase in size of the erythrocytes is usually determined by noting the diameter of the cells in a stained blood film. Such a measurement does not take into account the thickness of the cells, and thus does not indicate the true volume of the cells.

The volume of the average cells is best indicated by the volume index. This term was introduced by Capps,² in 1904, to denote the volume of the red cell relative to normal. He measured the mass of corpuscles by centrifugating a small amount of blood in a capillary tube, the hematocrit of Hedin. A count of the red cells was made simultaneously. The percentage by volume of cells divided by the number percentage of cells is the volume index. It is analogous to the color index, showing the relation of the mass of cells to the number instead of the hemoglobin to the number.

Capps compared the volume index with the color index in various diseases, and pointed out the essential facts to be gained from the procedure. He noted that in pernicious anemia the volume of the average red cell is greater than normal, while in secondary anemia it is less than normal.

The volume index determination is casually mentioned in textbooks of clinical pathology, but is little used in actual practice. I have recently studied the subject again, using much more exact methods than are now available. I have determined the mass of the red cells by the technic suggested by Hooper, Smith, Belt and Whipple.³ Ten cubic centimeters of blood is withdrawn by venipuncture, and run into a centrifuge tube containing 2 cc of 16 per cent sodium oxalate, an isotonic anticoagulant. The tube is centrifugated for one-half hour. The true cell mass is thus obtained without changes due to shrinking or swelling of the cells.

The red cell counts have all been done on oxalated blood withdrawn by venipuncture. Usually, duplicate counts have been made, using only pipets and counting chambers certified as correct by the U. S. Bureau of Standards. The hemoglobin has been determined on the same oxalated blood, using the ferricyanid method of Haldane as adapted by Van Slyke⁴ to his blood gas apparatus, and is calculated directly in grams. In determining the percentage of hemoglobin, 156 gm per hundred cubic centimeters of blood has been taken as 100 per cent, since I have found this figure to be the average hemoglobin content of normal blood with a count of 5,000,000 per cubic millimeter, which is reckoned as 100 per cent of cells.⁵

The data thus obtained afford an exceedingly accurate basis for the calculation of the volume index and the color index. Since the color index indicates only the amount of hemoglobin per cell and not the concentration, I have suggested a third index, which indicates directly the hemoglobin content per unit volume compared with normal. This index I have called the "saturation index." Herz⁶ attempted to express the same thing under the head "specific hemoglobin content" of the cell, while Rossdale⁷ has suggested the term "volume-color index." The saturation index is calculated by dividing the percentage of hemoglobin by the percentage by volume of cells. From these data we can figure also the actual volume and hemoglobin content of the average cell as well as the hemoglobin content of the cell mass.

The details of the calculation of the three indexes as determined here can be best illustrated by an example. On centrifugating 10 cc of an unknown blood with 2 cc of oxalate solution, 24 cc of packed corpuscles is obtained. Ten cubic centimeters of normal blood containing 5 million corpuscles per cubic millimeter, when similarly centrifugated, yields 48 cc of packed cells (International No. 2 centrifuge). The percentage by volume of cells in terms of normal is 24/48, or 50. The count of the red blood cells of the unknown blood is 3,000,000, or 60 per cent of normal. Normal blood contains 156 gm of hemoglobin per hundred cubic centimeters. The unknown blood is found to contain 624 gm, which is 624/156, or 40 per cent of normal.

The volume index	volume percentage of cells	= 50
	number percentage of cells	= 60 = 0.83
The color index	hemoglobin percentage	= 40
	number percentage of cells	= 60 = 0.67
The saturation index	hemoglobin percentage	= 40
	volume percentage of cells	= 50 = 0.80

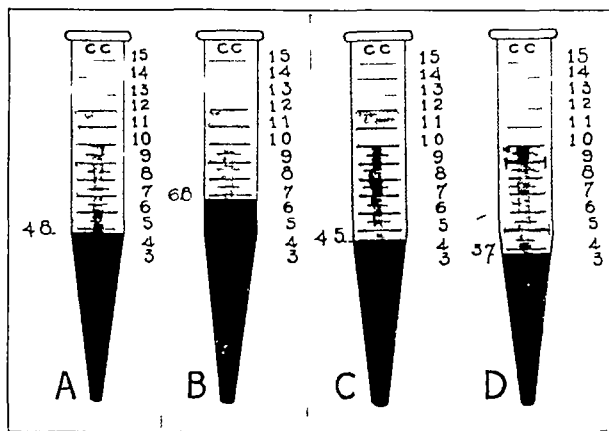


Fig 1—Volume of packed red corpuscles obtained on centrifugating 10 cc of blood containing 5,000,000 red cells per cubic millimeter. A normal blood volume of packed cells 48 cc (100 per cent of normal) volume index 1.00. B pernicious anemia volume of packed cells 68 cc (141 per cent of normal) volume index 1.41. C chronic secondary anemia not due to hemorrhage volume of packed cells 45 cc (94 per cent of normal) volume index 0.94. D chronic hemorrhagic anemia volume of packed cells 37 cc (77 per cent of normal) volume index 0.77.

¹ From the University of Kansas School of Medicine.
² Read before the Section on Practice of Medicine at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.
³ Capps J. A. J. M. Res. 5: 367, 1903.
⁴ Hooper C. W., Smith H. P., Belt A. E. and Whipple G. H. Am. J. Physiol. 51: 205 (March) 1920.

⁵ Van Slyke D. D. J. Biol. Chem. 33: 31, 1911. 18: 49, 1921.
⁶ Haden R. L. Normal Hemoglobin Standard. J. A. M. A. 79: 1496 (Oct. 28) 1922.
⁷ Haden R. L. Accurate Criteria for Differentiating Anemias, Arch. Int. Med. 31: 766 (May) 1923.
⁸ Herz Max. Virchows Arch. f. path. Anat. 133: 339, 1893.
⁹ Rossdale George. Quart. J. Med. 16: 245 (April) 1923.

In this blood, the volume of the average cell is 83 per cent of the normal, the average cell contains 67 per cent of the normal amount of hemoglobin, and the protoplasm of the cells is 80 per cent, saturated with hemoglobin. Figure 1 B shows the appearance of a tube after centrifugating 10 c.c. of normal blood containing 5,000,000 red cells per cubic millimeter.

Fifty-two normal adults, from 18 to 65 years of age, have been studied by the methods outlined. The

TABLE 1—Typical Volume, Color and Saturation Indexes in Normal Individuals

Red Blood Cells in Million per C Mm	Percentage by Volume of Red Blood Cells	Hemo globin in per Cent	Volume Index	Color Index	Saturation Index
4.99	100	101	1.00	1.01	1.01
4.98	102	104	1.07	1.04	1.02
5.15	104	106	1.01	1.02	1.01
5.28	104	103	0.99	0.98	0.99
5.80	99	97	1.03	1.01	0.93
4.20	83	84	0.99	1.00	1.01
4.56	90	90	0.99	0.99	1.00
5.20	98	103	0.95	0.99	1.05
4.87	99	97	1.02	0.99	0.97
4.97	98	99	0.99	1.00	1.01

volume, color and saturation indexes here are always 1.00, within the limits of technical error. This constancy of volume and hemoglobin content of normal cells is very striking. Ten typical determinations are shown in Table 1. I have found that the volume and

TABLE 2—The Volume, Color and Saturation Indexes in Normal Infants

Age, Days	Red Blood Cells in Million per C Mm	Percentage by Volume of Red Blood Cells	Hemo globin in per Cent	Volume Index	Color Index	Saturation Index
1	4.14	121	119	1.46	1.44	0.99
3	3.52	115	114	1.64	1.63	1.00
5	4.21	133	129	1.58	1.53	0.97
6	3.89	106	104	1.38	1.35	0.93
8	4.50	119	120	1.32	1.33	1.01

color index of the blood from the longitudinal sinus of normal infants under 10 days is uniformly greater than 1.00 (Table 2).

Fifty-four cases of secondary anemia have been studied. These cases include types due to hemorrhage,

TABLE 3—Typical Volume, Color and Saturation Indexes in Secondary Anemia

Red Blood Cells in Million per C Mm	Percent age by Volume of Red Blood Cells	Hemo globin in per Cent	Volume Index	Color Index	Satura tion Index	Diagnosis
1.97	39	35	1.00	0.90	0.90	Carcinoma stomach
2.01	42	42	1.02	1.02	1.00	Chronic nephritis
2.50	47	47	0.94	0.94	1.00	Banti's disease with gastric hemorrhage
2.95	56	49	0.97	0.83	0.86	Subphrenic abscess
3.10	50	43	0.80	0.70	0.88	Diffuse carcinomatosis
3.52	71	71	1.00	1.00	1.00	Pyelonephritis
4.65	62	42	0.68	0.45	0.67	Syphilis
2.26	46	46	1.02	1.02	1.00	Acute gastric hemorrhage
3.00	47	37	0.78	0.62	0.79	Hemorrhoids
1.37	20	15	0.73	0.59	0.61	Chronic intestinal hemorrhage

increased hemolysis, decreased bone marrow function, or a combination of these factors. The three indexes are always 1.00 or less. Ten typical cases are shown in Table 3. In chronic hemorrhagic cases, the volume index is usually very low. No instance of a plus volume index has been found in this group.

The results of the volume index determination in fifty consecutive cases of pernicious anemia are shown

in Table 4. In every case, the volume index is greater than 1, and usually very much greater. The volume index is always as great as the color index, within the limits of technical error, and usually greater. The

TABLE 4—Volume, Color and Saturation Indexes in Fifty Successive Cases of Pernicious Anemia

Red Blood Cells in Million per C Mm	Percentage by Volume of Red Blood Cells	Hemo globin in per Cent	Volume Index	Color Index	Saturation Index
0.39	10	9	1.34	1.14	0.85
0.59	17	17	1.42	1.42	1.00
0.60	15	15	1.25	1.25	1.00
0.74	21	18	1.41	1.21	0.85
0.84	27	26	1.71	1.55	0.97
0.86	25	23	1.46	1.34	0.92
0.77	21	21	1.21	1.21	1.00
0.98	28	28	1.43	1.43	1.00
0.99	28	28	1.38	1.40	1.01
0.99	28	25	1.40	1.4	0.90
1.00	29	25	1.40	1.3	0.84
1.04	32	28	1.52	1.33	0.88
1.18	31	27	1.3	1.11	0.84
1.24	33	19	1.34	0.89	0.60
1.33	35	34	1.35	1.28	0.90
1.39	33	30	1.21	1.09	0.90
1.35	46	46	1.70	1.70	1.00
1.39	37	37	1.32	1.32	1.00
1.39	42	37	1.49	1.32	0.85
1.39	44	39	1.66	1.39	0.85
1.42	45	43	1.51	1.3	1.07
1.45	46	46	1.3	1.53	1.00
1.45	49	49	1.61	1.61	1.00
1.48	46	44	1.45	1.39	0.96
1.61	39	37	1.22	1.16	0.93
1.62	42	43	1.31	1.34	1.02
1.64	46	46	1.39	1.39	1.00
1.65	42	27	1.27	1.09	0.85
1.73	48	38	1.35	1.10	0.79
1.75	46	38	1.35	1.10	0.79
1.80	48	39	1.33	1.08	0.82
1.87	56	51	1.49	1.21	0.91
1.87	51	51	1.36	1.26	1.00
1.88	63	59	1.68	1.57	0.93
1.99	56	55	1.40	1.30	0.93
2.10	58	55	1.3	1.20	0.96
2.18	57	57	1.31	1.31	1.00
2.23	75	72	1.69	1.62	0.96
2.27	81	42	1.77	0.92	0.53
2.33	62	48	1.33	1.24	0.94
2.36	68	64	1.45	1.37	0.91
2.41	74	74	1.57	1.4	0.98
2.60	61	49	1.17	0.94	0.80
2.60	75	65	1.44	1.25	0.90
2.79	60	65	1.23	1.10	0.94
2.88	85	77	1.46	1.33	0.91
2.93	79	82	1.35	1.39	1.03
3.16	92	82	1.46	1.30	0.90
3.33	81	80	1.20	1.0	1.00
3.44	75	71	1.09	1.03	0.95
Av 1.71	47	44	1.41	1.29	0.92

saturation index is never over 1, showing that the cells are never supersaturated with hemoglobin.

The three indexes in pernicious anemia are contrasted with the qualitative changes, as seen in a stained film in ten cases of the disease in Table 5. It is apparent

TABLE 5—Typical Color, Volume and Saturation Indexes Compared with the Qualitative Changes in the Red Cells in Pernicious Anemia

Red Blood Cells in Million per C Mm	Percent age by Volume of Red Blood Cells	Hemo globin in per Cent	Volume Index	Color Index	Satura tion Index	Aniso cytosis	Poikilo cytosis	Nucleated Red Blood Cells per 500 White Blood Cells
0.59	17	17	1.42	1.42	1.00	++++	++++	+++
0.60	15	15	1.25	1.25	1.00	++++	++	0
0.86	25	23	1.46	1.34	0.92	+	+++	10
1.35	46	46	1.70	1.70	1.00	+	+	0
1.39	37	37	1.32	1.32	1.00	++++	++++	0
1.57	63	59	1.68	1.57	0.93	+	+	0
2.18	57	57	1.31	1.31	1.00	0	0	0
2.60	75	65	1.44	1.25	0.90	+	0	0
2.88	85	77	1.46	1.33	0.91	+	0	0
3.16	92	82	1.46	1.30	0.90	+	+	0

that the excessive qualitative changes that are so often thought necessary for a diagnosis of pernicious anemia occur typically only in patients with very low red cell counts. The patients with relatively high counts, how-

ever, still have a high volume index, indicating the diagnostic value of the procedure in early cases of pernicious anemia. Such blood closely resembles the blood of infants under 10 days of age.

TABLE 6—Successive Volume Index Determinations of Cases of Pernicious Anemia

Case	Date	Red Blood Cells in Million per C. Mm.	Percentage of Red Blood Cells	Hemoglobin in per Cent	Volume Index	Color Index	Saturation Index
1	April 16	1.18	31	26	1.34	1.11	0.84
	April 30	0.97	27	27	1.38	1.38	1.00
	June 7	2.67	63	59	1.23	1.11	0.91
	Nov. 29	4.61	93	91	0.99	1.03	1.03
2	Nov. 20	2.18	57	57	1.31	1.31	1.00
	Dec. 8	2.99	73	75	1.22	1.25	1.02
	April 17	1.63	44	42	1.33	1.28	0.93
	July 14	2.42	65	62	1.35	1.30	0.95
3	Nov. 18	2.41	76	74	1.57	1.54	0.98
	Jan. 1	3.24	88	83	1.35	1.28	0.93
4	Oct. 12	0.59	17	17	1.42	1.42	1.00
	Nov. 20	3.21	73	70	1.14	1.09	0.96

A number of patients with pernicious anemia have been followed over a prolonged period, with successive determinations. The results in four cases are shown in Table 6. The patients who are doing well show a return of the volume index to normal. This is best seen in the first case in Table 5. The patients who have done poorly continue to have a plus index.

TABLE 7—The Average Volume, Color and Saturation Indexes of Secondary and Pernicious Anemia Contrasted with Normal Blood

Red Blood Cells in Million per C. Mm.	Percentage of Red Blood Cells	Hemoglobin in per Cent	Volume Index	Color Index	Saturation Index	
4.74	93	93	1.00	1.00	1.00	Average 52 normal men and women
1.71	47	44	1.41	1.29	0.92	Average 50 cases pernicious anemia
3.40	63	55	0.94	0.81	0.86	Average 47 cases secondary anemia not due to hemorrhage
3.57	55	44	0.77	0.62	0.80	Average 7 cases hemorrhagic anemia

The actual volume of the average cell, the hemoglobin content, and the percentage of hemoglobin in the cells in various types of anemia are shown in Table 7. The average volume index in pernicious anemia is 1.41, as contrasted with 0.94 for the secondary anemias other than those due to hemorrhage. The volume of the cells in pernicious anemia is thus 50 per cent greater than in

TABLE 8—Comparison of the Volume, Hemoglobin Content and Hemoglobin Percentage of the Average Red Cell in Normal Blood and in Anemia

Volume of the Average Cell in Cc. $\times 10^{-11}$	Grams of Hemoglobin in the Average Cell $\times 10^{-11}$	Actual Hemoglobin Percentage in the Cell	
9.6	3.12	32.5	Average 52 normal men and women
13.5	4.02	30.0	Average 50 cases pernicious anemia
9.0	2.50	27.8	Average 47 cases secondary anemia not due to hemorrhage
7.4	1.94	26.2	Average 7 cases chronic hemorrhagic anemia

secondary anemia. It is noteworthy that the actual percentage of the hemoglobin in the cells in pernicious anemia is less than normal, and little higher than in other types of anemia. The difference is in the volume of the cell. This affords definite proof that a super-

saturation of cells with hemoglobin does not occur. Figure 2 shows models made to scale from the averages shown in Table 7.

A volume index greater than 1.00 has been found in only four patients other than in pernicious anemia. These are given in Table 9. In all four, clinical symptoms showed that the condition was not pernicious

TABLE 9—Findings in Cases Other Than Pernicious Anemia in Which the Volume Index Was Greater Than One

Red Blood Cells in Million per C. Mm.	Percentage of Red Blood Cells	Hemoglobin in per Cent	Volume Index	Color Index	Saturation Index	Diagnosis
1.68	40	40	1.20	1.20	1.00	Aplastic anemia
3.30	79	82	1.20	1.24	0.97	Hemolytic jaundice
1.58	42	34	1.34	1.10	0.82	Splenic anemia
2.50	60	54	1.20	1.08	0.90	Von Jakch's anemia

anemia. The presence of free hydrochloric acid in the gastric juice was demonstrated in three of the four patients. The absence of free hydrochloric acid is practically a constant finding in pernicious anemia. In

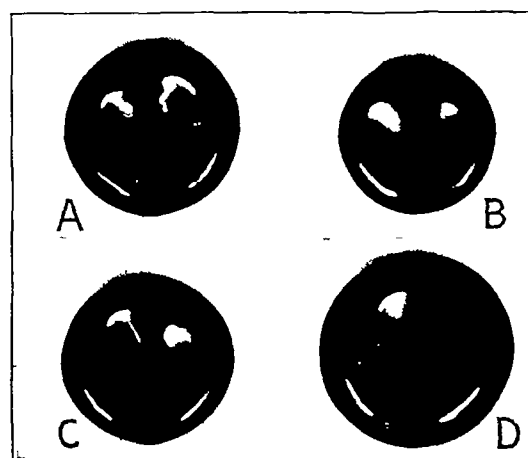


Fig. 2—Models of red blood cells made from averages in Table 7 to indicate the relative volume in different conditions: A normal adult volume index 1.00 (average of fifty-two cases); B chronic hemorrhagic anemia volume index 0.77 (average of eight cases); C chronic secondary anemia not due to hemorrhage volume index 0.94 (average of forty-seven cases); D pernicious anemia volume index 1.41 (average of fifty cases).

forty-seven of the fifty cases here reported, a gastric analysis was made, and in no instance was free hydrochloric acid found. The absence of free hydrochloric acid is probably an essential diagnostic point. The combination of absence of free hydrochloric acid and a plus volume index is characteristic and constant in pernicious anemia, and probably essential for the diagnosis of the disease.

SUMMARY

A summary of the study of 171 individuals with an accurate volume, color and saturation index shows that in normal adults, the indexes are always 1.00, within the limits of technical error.

In secondary anemia, the indexes are usually less than 1.00, and seldom greater than 1.00.

A plus volume index is a constant finding in pernicious anemia. It is present even in early cases in which other qualitative changes are not apparent. The color index is never greater, and usually is less than the volume index. The saturation index is never greater than 1.

A plus volume index together with the absence of free hydrochloric acid in the gastric juice is practically pathognomonic evidence of pernicious anemia

ABSTRACT OF DISCUSSION

DR H Z GIFFIN, Rochester, Minn This contribution on the value of the volume index has a most important bearing on the early diagnosis of pernicious anemia One of my associates, Dr C F Dixon, has run a series of 100 cases, half of which were pernicious anemia, and his findings have corroborated those of Dr Haden A high volume index and the absence of hydrochloric acid in the gastric contents, even with only a slight degree of anemia, can be regarded as presumptive evidence of the presence of pernicious anemia I do not know however, that we can as yet say that the normal index is arbitrarily, 1, as, in a few cases of rather severe anemia secondary to other conditions, an index somewhat above 1 has been obtained We can, however, feel certain concerning indexes of 11 In our series of cases of pernicious anemia, the lowest index was 113, and the highest 191 Estimation of the volume index is especially valuable in cases in which the color index runs between 07 and 09 In one instance of pernicious anemia with a constant color index of 08, using a Dare hemoglobinometer, a volume index of 19 was obtained It is possible also that, in the very early cases of pernicious anemia, one may encounter a gradually rising index, and this rising index may be regarded as a significant feature The volume index in our cases of polycythemia has been normal In leukemia it has, of course, been high because of the admixture of leukocytes and erythrocytes The estimation of the volume index should, I believe, be a part of the regular laboratory routine in questionable cases of anemia

DR JOSEPH A CAPPS, Chicago There are several points in Dr Haden's paper that are of great practical importance In our textbooks, the criteria usually cited on which the diagnosis of pernicious anemia is based are (a) high color index, (b) poikilocytosis and (c) nucleated red cells, particularly megaloblasts Of greater value than any of these is macrocytosis Macrocytes 9 microns or more in diameter can often be demonstrated by the micrometer scale, but, in many cases especially in aplastic pernicious anemia, there may be no large macrocytes, but the volume index demonstrates that the average cell volume is above normal Dr Haden's methods of determining the volume, as well as the hemoglobin, are more accurate than those employed by us in our studies made in 1903 But his conclusions are the same as ours, namely, that in pernicious anemia there is a constant high volume index and that red corpuscles are never supersaturated with hemoglobin In other words, a high color index is due to an increase in cell volume The volume index procedure is simple and should be more extensively used

DR R L HADEN, Kansas City, Mo I should like to emphasize the simplicity of the technic of the volume index determination The ease with which the test may be made makes it all the more valuable Dr Giffin said that there may be a high volume index and low color index We have seen several such cases Here the color index is of no differential value The importance of the accurate estimation of the red cells should also be emphasized We have no difficulty in getting accurate figures on the cell mass, but we do see many inaccurate red cell counts We do not find much value in the saturation index, except as indicating the absence of any supersaturation of the cells with hemoglobin I should like to thank Dr Giffin and Dr Capps for their discussion, and to say that our work has only confirmed the original observations made by Dr Capps twenty years ago

Birds as Disease Carriers—To what extent diseases are carried and transmitted by the partially immune wild animals, such as birds on the wing to poultry yards, is a still unknown quantity It may prove to be insignificant here and formidable there It is a factor not to be neglected in our search for causes and antecedents—Theobald Smith *Edinburgh M J* 31 225 (April) 1924

FURTHER RESULTS WITH OVARIAN IMPLANTATION*

W L ESTES, JR, MD
BETHLEHEM, PA

In pelvic inflammatory disease the belief is common that operative intervention is the court of last resort, and that the removal of all diseased tissues is demanded to insure restoration of the health of the patient In many acute or subacute lesions, the involvement of the pelvic viscera is so complete that nothing short of bilateral oophorosalphingectomy, with or without hysterectomy, is advisable In chronic or less extensive lesions, more latitude in judgment and greater possibility for conservative measures are offered Nevertheless, it is customary to feel that the preservation of menstruation by the retention of the uterus and an ovary is the best the patient can expect and sterility the inevitable price the sufferer must pay Because the disease itself destroys the fallopian tube, the path of the

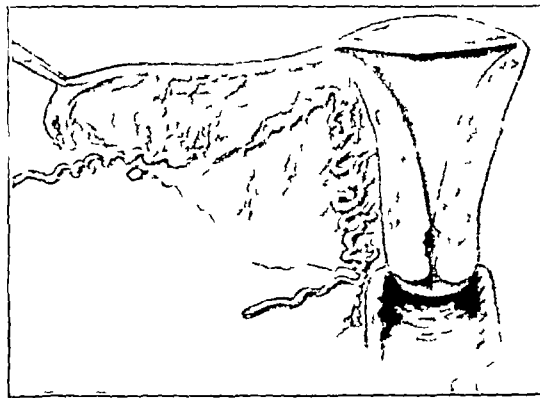


Fig 1—Anastomosis of uterine and ovarian arteries, the blood supply of the ovary

ovum from the ovary to the uterus, opportunity for pregnancy seems past, and the surgeon's sole duty is to restore the patient to health, preserving menstruation if possible

However, with a broad vision of the problem involved, not only should curative measures by eradication of the disease be contemplated, but also the restoration of the oviduct or an adequate substitute for it, should be accomplished, just as intestinal resection must include not only excision of the diseased portion but also restoration of the fecal path

Each operation for chronic pelvic inflammatory disease, therefore, should represent a potential threefold task (1) the removal of diseased tissues, (2) the preservation of menstruation, and (3) the restoration or preservation of the opportunity for pregnancy

In a recent report,¹ the operative devices to return the possibility of pregnancy after bilateral salpingectomy were reviewed

1 Franklin Martin's² ingenious plastic operation on the uterine cornu was one of the earliest

2 Pregnancy, with abortion, has followed

(a) Transplanting a free piece of ovary to the interior of the stump of one oviduct³

* Read before the Section on Obstetrics Gynecology and Abdominal Surgery at the Seventy-Fifth Annual Session of the American Medical Association Chicago June 1924

1 Estes W L Jr *Surg Gynec & Obst* 38 394 (March) 1924

2 Martin F H *Chicago M Rec* 26 1 1903

3 Morris, R J *New York M J* 62 436 1895

(b) Sectioning the fundus of the uterus and placing an ovary still attached to its pedicle in the cavity of the uterus, dangling like a polyp.⁴

(c) Division of the horn of the uterus, splitting the remaining ovary, leaving each half attached to the pedicle, one half being implanted in the horn of the uterus which was closed about it.⁵

3 Full term pregnancy has followed

(a) Grafting of ovaries from one woman into another from whom both ovaries had been removed, the tubes being normal.⁶

(b) Free ovarian graft in the stump of the tube at the cornu of the uterus.⁷

In 1908 Petit⁸ removed from a woman of 32, suffering from a "suppurating bilateral salpingitis," the right tube and ovary and the left tube and a portion of the left ovary, saving the external quarter. The uterus was then punctured at the uterine horn, the fragment of ovary, still attached to its pedicle, was introduced into the uterine cavity and the puncture was closed about the pedicle, a procedure very similar to Storer's. The patient menstruated four days instead of seven, and two years later became pregnant and was delivered at term of a normal child. In a second patient, a girl of 18, only one fifth of one ovary could be saved. It was placed similarly in the uterine cavity. The patient had menopausal symptoms, hot flashes for five months, then she began to menstruate and has menstruated regularly since.

Tuffier reports a similar case of his own in which hysterectomy was later required because of the pain from intestinal and uterine adhesions. Menstruation, however, was regular, though painful. He believes that the uterine cavity is too narrow and small to contain the entire ovary, but he considers the operation logical and superior to his old extrapelvic transplantation.

Robineau,⁹ too, has found that menstruation, though more abundant, is preserved after "intra-uterine trans-

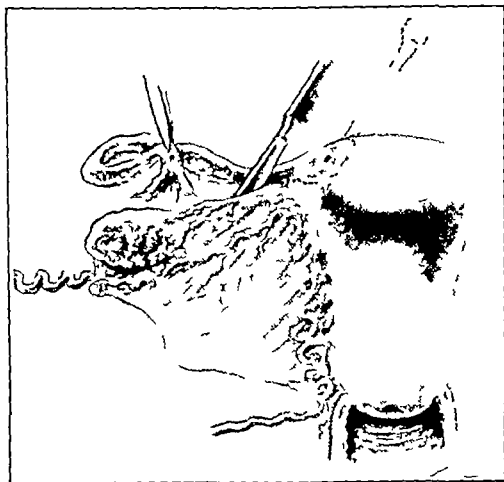


Fig 2—Excision of the tube and insertion of the tube in the uterus. The lumen of the stump of the uterine horn is shown in the illustration as a dot.

plantation" of an ovary. In one of his cases there were two periods of amenorrhea of three months' duration, actual pregnancy was doubtful.

OVARIAN IMPLANTATION

A year ago, I gave a preliminary report of our experience with an operation evolved by my father, termed "ovarian implantation." The results were sufficiently striking to justify an attempt to investigate the entire group. This operation has been performed close to 100 times over a period of approximately eighteen years. The most recent cases cannot properly

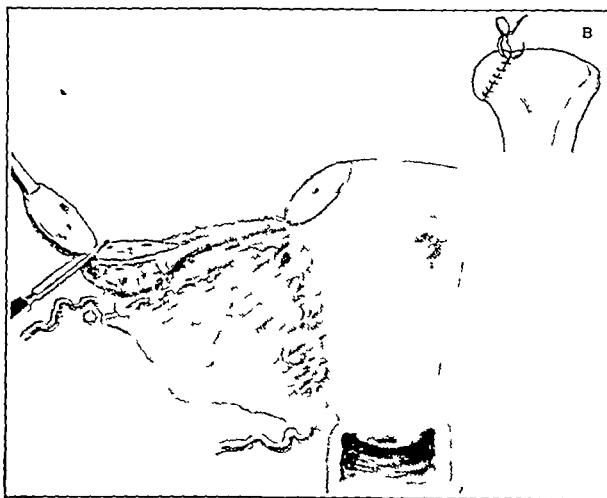


Fig 3—Resection of the ovary leaving a raw area the size of the upper surface of the uterine horn, B the raw area of the ovary sutured to the raw area of the uterus.

be included in these statistics. The present study is based, therefore, on the records of ninety-five cases only. Among these cases are included those of Dr W P Walker.

DETAILS OF OPERATION

With the patient in the Trendelenburg position and the upper abdomen packed off, pelvic adhesions and the tubes and ovaries are carefully and gently freed. The ovaries are thoroughly inspected, and the one more normal in appearance is chosen for implantation. The other may likewise be saved if its condition justifies it. In the majority of cases, it must be sacrificed. Operative procedures are given in the order of their occurrence.

1 The tube and ovary of the side opposite the implantation are first removed. The broad ligament and the uterine artery, where it emerges at the horn of the uterus, are tied off. The operation is not completed on this side until the implantation has been made (Fig 4).

2 The tube of the implanted side is then removed, together with enough of the horn of the uterus at the tubal attachment to leave a raw area the size of the cut surface of the ovary. Care is taken to preserve the anastomosis of the uterine and ovarian arteries (Fig 1). In the center of this surface will usually be seen the opening into the uterine cavity less than 0.25 cc in diameter, or the size of the heads of two ordinary pins (Fig 2). There will be a slight oozing but it can be readily controlled by pressure, after ligation of the uterine artery just below the operative area.

3 A longitudinal slice is then taken through the full diameter of the ovary removing usually about one quarter of it from the surface opposite its ligament and mesentery (Fig 3). The amount of ovary removed depends on the amount of cystic degeneration or inflammation that may be present. As high as seven eighths of the ovary has been removed, and the remainder implanted.

4 The cut surface of the ovary is then turned over on the denuded area of the uterine horn and sutured in place by a continuous catgut (chromic No 0) beginning at the inferior margin and approximating the complete circumference of the ovarian and uterine wounds (Fig 3 inset, and Fig 6).

4 Dudley A P Post Grad 15 546 1900

5 Storer Boston M & S J 172 41 1915

6 Morris R J M Rec 69 697 1906

7 Bambridge W S Am J Obst & Gynec 5 379 (April) 1923

8 Petit cited by Tuffier Bull et mem Soc de chir de Paris 48 1051 1908

9 Robineau Bull et mem Soc de chir de Paris 48 1082 1908

5 The round ligament is then plicated over this entire area by suture to the uterus in order to cover and completely peritonealize it (Figs 7 and 8)

6 On the opposite side, the stump of the broad ligament is sutured to the horn of the uterus and, in turn, like the implanted area, covered by the round ligament (Figs 5 and 7). A culdesac drain, if indicated, may then be inserted. The abdomen is closed without anterior drainage.

RESULTS

Among our early cases were two deaths from general peritonitis, apparently not attributable to the operation but to the disease itself. In our last sixty-five cases there were no deaths.

The cases are selected with regard not only to (1) age, (2) social status, and (3) conditions of the uterus, but also to (4) the stage of general pelvic inflammation. The following points are considered in the selection of cases.

1 The operation was performed on patients whose ages ranged from 16 to 41, the average age being 26.2 years. It was usually considered for young women below 30 because in the older women there is less desire for and less likelihood of pregnancy occurring.

2 Women of low mental caliber or of questionable character, obviously, should not be given the opportunity for future pregnancy.

3 A very edematous uterus, which is evidently involved in the inflammation, is considered a contra-indication.

4 No plastic operation is attempted if there is present a large pyosalpinx or pelvic abscesses.

Ninety-three cases have been investigated, but completed returns have been obtained in only forty-five. The majority of the women who have undergone this operation have belonged to the nomadic labor class and have been exceedingly difficult to trace. The following data may be considered the results to date.

Operative Notations—1 Cultures were in general sterile, gonococci were found in two cases, and colon bacilli in one case. There were six cases of tuberculous salpingitis. The vast majority of patients reported sterile were considered to be suffering from old chronic gonococcal infections.

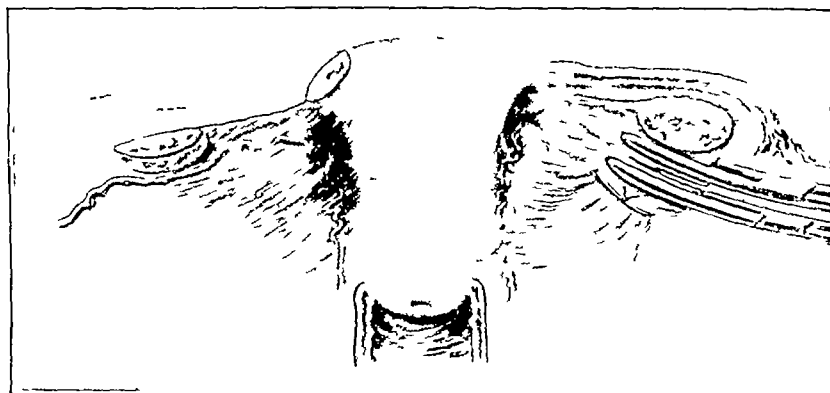


Fig 4—Method of removal of nonimplanted side

2 The right ovary was used a trifle more frequently than the left for the implantation, of eighty-five cases, the right was employed in forty-four, the left in thirty-seven, and both ovaries in four. However, each ovary may be used with equal facility.

After-History—1 Pregnancy. Of the forty-five patients from whom reports were obtained, twenty-two

had been pregnant before operation, twenty-three had never been. Pregnancy after operation occurred in four cases, 9 per cent of forty-five. There were two cases of full term pregnancy, both children are living and normal in every way. In one case, the complete record is not available, but the patient had had no

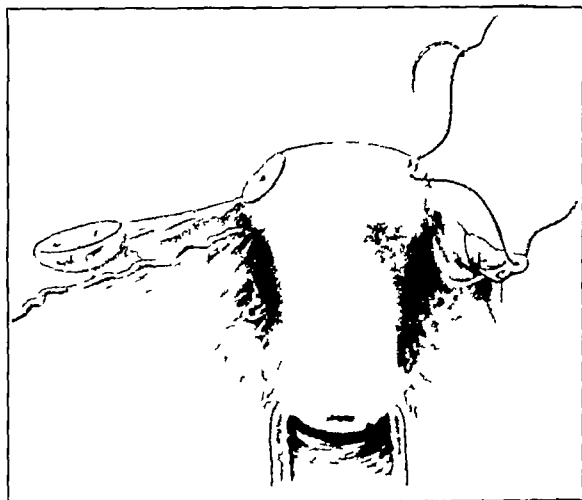


Fig 5—Method of suture of stump of broad ligament to uterine horn.

pregnancy before operation, in the other, the woman, aged 30 who had been married three years and had never been pregnant, was operated on for tuberculous salpingitis and implantation done, Aug 12, 1916. The baby was born, July 19, 1921, delivery was normal, and both mother and child have been quite healthy since.

Two women had miscarriages at about three months. In neither case was any specimen available for corroborative examination. None of these four women had had more than one child or one pregnancy.

2 Menses. Menstruation was regular with the usual duration in thirty-three or 73.5 per cent, of the patients, irregular in five, 11.1 per cent, and either profuse or scanty and painful, in three cases the report was insufficient for accurate deductions, only four patients, about 9 per cent, failed to menstruate at 23, 28, 31 and 37 years, respectively. In two of these, only a very small portion of the ovary was saved. There was almost always some gain in weight, usually from 15 to 75 pounds (7 to 34 kg). Normal menopause, following the implantation, after menstruation for seven or more years, occurred in eight patients, in one, at the age of 33, in the others, at from 41 to 47 years.

3 Pain. Fifteen, or 33 1/3 per cent, complained of some pain, usually with the menses, either headache, backache, or pain in the same side as the implanted ovary.

One woman had, with menstruation, rather severe pain in the breasts, and backache.

4 Nervousness. Twenty-three, or about 50 per cent, of the patients, acknowledged that they often felt nervous. One believed she was less nervous following the operation. One woman, about a year after the operation, developed symptoms of hyperthyroidism.

5 Subsequent Operation Four, or 9 per cent, had sufficient discomfort or subsequent pain and disability to require another operation. A cystic enlargement of the implanted ovary was found in three patients. There was no definite information as to the fourth, but a similar condition probably existed.

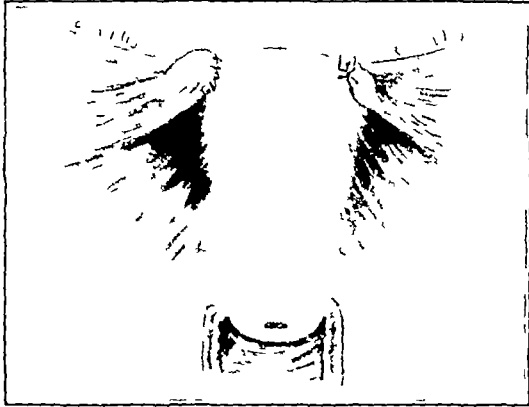


Fig 6—Ovary implanted (left) broad ligament applied to the uterine horn (right)

COMMENT

Following implantation, then, there is usually a fairly normal menstruation, a return to good health and a gain in weight, but there may be nervousness and some discomfort, such as backache, headache or pain with the menses, in or about the implanted ovary. Rarely, the ovary may become cystic and require subsequent removal. Pregnancy may occur.

If pregnancy takes place, it is because the opening in the uterine horn is brought in contact with a point

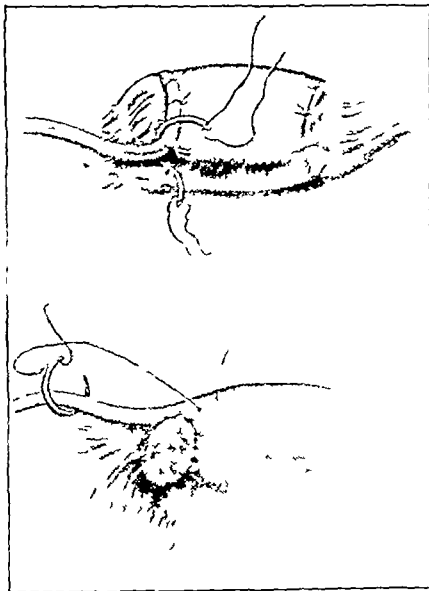


Fig 7—Suture of the round ligament over the implanted ovary below beginning of the process above concluding the same suture

on the cut surface of the ovary where a graafian follicle will develop.

Factors that influence the successful extrusion of the ovum into the uterine horn and cavity are (1) patency of the uterine horn, and (2) the proper development of a graafian follicle.

1 The inflammation of the tube, or the trauma of operation, may involve the horn or its mucous membrane so that in healing it is closed. This possibility must always be reckoned with as a cause for failure of pregnancy and may be obviated by a deeper section through the uterus reaching the beginning of the uterine cavity itself.

2 The ovum or ovum-bearing tissue, the cortex of the ovary, may not be brought in contact with the mucous membrane opening of the uterine horn. This may more surely be accomplished by care in sectioning the ovary so that a bare shell of capsule, or else the greater portion of the ovary down close to the hilum, is removed, so that the cut surface, which will be applied over the uterine horn, shall be through the ovum-bearing tissue. When most of the ovary is sacrificed, the other had best be saved to insure menstruation.

These changes from the original technic have been used during the last year. It is too early to determine how successful they may prove.

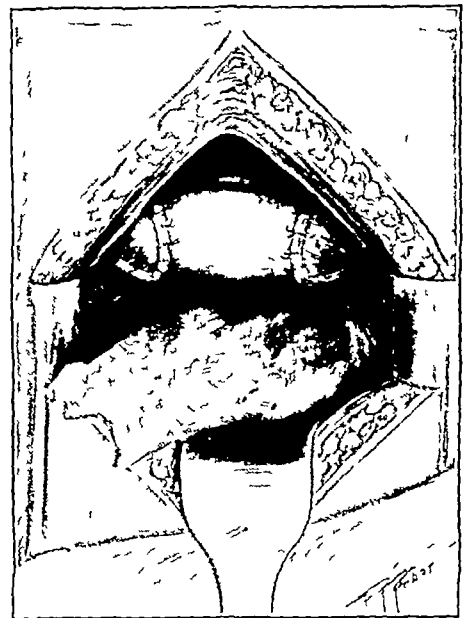


Fig 8—The operation completed with both uterine horns covered by the round ligaments

I have been unable to find any record of a series of cases as extensive as ours. Of other procedures that may yield pregnancy, the introduction into the uterine cavity, through the uterine wall, of a portion of an ovary still attached to its pedicle, seems to have yielded encouraging results in the few cases reported (Dudley, Storer, Petit, Tuffier), though hysterectomy may be necessary later to relieve painful and profuse menstruation. The uterine wall-piercing operation may prove of special value when inflammation involves the stump of the tube and the cornu, in tuberculous salpingitis, when the introduction of an ovary into the uterine wall might disseminate disease, an implantation would seem preferable.

CONCLUSION

It is desired in this second report again to direct attention to the possibilities of conservative ovarian implantation, and the opportunity that it affords for permitting pregnancy as well as for maintaining menstruation.

PREVENTION OF STERILITY*

DONALD MACOMBER, MD
BOSTON

The great interest recently shown by the profession in the problems of sterility has given a renewed impetus to the study of this subject and has called attention to the large economic and social aspects of the question. It has not been generally recognized, however, that sterility presents its problems not only to the specialist, but also, to an even greater degree, to the general practitioner of medicine. The role of the practitioner is not the same as that of the specialist. The latter is called in as an expert in diagnosis or treatment, to deal with conditions that have already arisen, the practitioner's role is rather one of prevention, as, in fact, it always has been. He is the middleman between patient and specialist, and it is his duty to disseminate knowledge of those particular laws of hygiene, the breaking of which is almost always responsible for the development of sterility.

The importance of the subject can hardly be over-emphasized. Sterile marriages are very prevalent, and it would seem as if modern ways of living, and possibly also modern economic standards, with the consequent widespread use of methods of "birth control," were causing a still further increase in their number. It is rare, indeed, in the practice of medicine to deal with a condition affecting every tenth family throughout the community, and yet that is the figure which every study of the frequency of sterility has shown. Considerations of the so-called differential birth rate, with a falling off in the number of births among the highly educated, make the question of prevention of sterility one of compelling importance. Many economists have laid the decreasing birth rate among this class to voluntary limitation in the size of the family, that factor is of undoubted importance, but we believe that it has been supplemented by an actual decrease in fertility. Any help, then, which can be gained by studying the prevention of sterility will be of great economic and social importance to the race.

It has been the universal experience in every branch of medicine that it is not until the causes of a given disease are well understood that much can be done in the way of effective prophylaxis. Our knowledge of the causes of sterility is still far from being complete, but recent studies have so far clarified the field that at least the more general aspects of its etiology are well recognized. Before proceeding, then, to a discussion of the prevention of sterility in its various forms, we must have a clear understanding of the causes that are operative in producing any particular kind of sterility. These causes and their prevention may be discussed under four general classes, namely, developmental, congestive, infective and constitutional. In animals, there is sometimes to be found a fifth cause of sterility, when, in pure bred strains, a low degree of fertility is inherited but this is an unimportant factor in the human race since we rarely, if ever, encounter a degree of inbreeding of sufficient intensity to make this particular factor operative.

It is not my intention, under any of these headings, to enter into a minute discussion as to all the possible causes, or all the methods of their prevention. It is

rather my intention to point out certain broad principles that seem to me to be back of the individual manifestations.

DEVELOPMENTAL CAUSES OF STERILITY

Under the first heading, then, I shall not discuss such rare developmental anomalies as double uterus, absent vagina and absent testes, but refer only to the more common and less complete failures of development. These minor failures are much more commonly found in the woman than they are in the man. In fact, the only common failure of any importance at all that occurs in the man is undescended testes. The cause of this is little understood, and therefore we must wait for further knowledge before any rational method of prevention can be devised.

Minor failures of development in the female are of much more common occurrence, and for that reason the causes for such failures are more fully understood. As seen in later life, the chief abnormality seems to be a mechanical one. In childhood, the vagina is short and the cervix and uterus lie in the same axis with it, and relatively close to the symphysis. The development that normally goes on at the time of puberty consists in a growth of the uterus, cervix and vagina. This growth results, among other things, in a lengthening of the anterior wall of the vagina, which permits the developing cervix to take its normal position back in the pelvis, and the fundus to rise to the normal adult position. Occasionally, this development fails entirely, in which case a true infantile condition of the uterus and cervix results. Most frequently, the fundus undergoes at least a certain amount of development, and the chief failure is in the lengthening of the anterior wall of the vagina. As the fundus is drawn up and forward, and the small undeveloped cervix is held anteriorly by the short wall of the vagina, an anteversion is bound to result. There are naturally all degrees between the infantile and the normal, some anteversions are symptomless and others give rise to the most extreme forms of dysmenorrhea.

These facts in regard to anteversion and underdevelopment in general are, of course, well known but there is a general lack of appreciation of the possibility of preventing their appearance. It seems fairly obvious that the cause, whatever it may be, cannot be an hereditary one, if this were so, the amount of sterility which failure of development must necessarily produce would soon, under the action of natural laws, breed itself out. If the cause is not hereditary it must be environmental, and the natural presumption would be that it must be an environmental cause, acting during the developmental period of puberty. We believe, on this and also on other grounds, that this cause is to be found in poor hygiene during this period, and that, if recognition of this fact were sufficiently general, this form of sterility might largely be eliminated.

The question, then, of the proper hygiene during the development period assumes chief place in the discussion of the prevention of these failures. In dealing with this question, we must remember that the function of reproduction, perhaps more than the function of any other system in the body, requires the highest possible bodily perfection and that therefore anything affecting general health and condition may at this developmental period be doubly important in giving rise to various anomalies. It is rare, indeed, in the adult to find underdevelopment present with the history of a normal girlhood. The common history in cases in which there

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

has been a failure of development is a slow maturing in visible growth and development, together often with the story of painful menstrual periods of increasing severity. Such a condition is insidious in its onset, since it is uncommon to get a history of pain with the very earliest menstruations. It is often only when social duties and pleasures, together with long school hours are added to the normal strain of this trying period in a girl's life that dysmenorrhea and other functional disorders make their appearance.

Prevention can be made possible only when mothers understand the dangers of overtaxing nervous and physical powers during puberty, and particularly during menstruation itself. They should realize that during menstruation the whole physiologic condition of the woman, including the functions of the digestive, circulatory and nervous systems, is unstable and easily upset. This is especially true during the first day or two of active flow. It is something too often neglected by teachers and directors of physical training. In after life, this instability of the nervous system, with its tendency to functional derangements of other organs, is usually only temporary and of much less importance, but in the growing girl, a few repetitions of overstrain during these critical periods may institute permanent trouble, and perhaps definitely arrest development.

During puberty, and when the partially developed organs of the growing child are not as yet fully adapted to the performance of their function, menstruation is often irregular and imperfect, and the degree of care that is given to the first few periods often determines the satisfactory, or unsatisfactory, character of the catamenia during succeeding years. The mother of a girl who is approaching puberty should always warn her daughter of what is to be expected, should tell her that there is nothing abnormal in the appearance of catamenial blood, and should urge her to report the fact at once. She should be instructed that she can take no more important supervision of her daughter than to insist on complete rest during the first few menstrual periods. The child should remain in bed, or between the bed and the sofa, as may be most restful to her, during the whole of the first period, but should be warned that such extreme care will not be necessary during the rest of her life. If this first catamenial period passes over easily, she may be up and about the house during the last day or two of the next period, and the amount of care taken should decrease gradually during succeeding months, in accordance with the amount of nervous or other general disturbance or of local discomfort which the individual girl experiences.

In the normal course of events, and with some such care as has just been outlined, menstruation should keep on as a regular and practically painless normal function. Should, however, the periods gradually become more painful, with other symptoms pointing to a deranged function, a determined search should be made for anything in the environment that may be instrumental in bringing on these disturbances. In most instances, the disturbing factor will be found to be easily remediable and an attempt should be made to relieve the load, even at the expense of temporarily leaving school or giving up extra social duties. The importance of conformity to the laws of hygiene during this difficult period in a girl's life cannot be exaggerated.

Such knowledge must be disseminated by the practitioner. He knows the patient in her home environment, and can usually make a pretty shrewd guess as to the real cause. If mothers really understood that full

one quarter of sterile women are sterile from this one cause alone, and that the issue lay directly with them, it does not seem that there could be any doubt as to the outcome. Where dysmenorrhea has become established, everything possible should be done to encourage bodily development. Plenty of the proper kind of exercise must be supplemented by plenty of fresh air and healthy sleep. It must also be accompanied by a proper diet. All the recent experimental work on diet has emphasized the importance of a properly balanced ration to growth and normal development. This work has brought out also that seemingly insignificant deficiencies have a disproportionately great effect when young growing animals are submitted to them. The diet of every young animal or growing boy or girl must contain an adequate percentage of protein from sufficiently varied sources, an abundant supply of the various vitamins, and last, but probably most important of all, a large amount and variety of the various mineral constituents of the body. The most important of these are calcium, phosphorus, iron and iodine. The diet of the young girl or boy should include one quart of milk, eggs, plenty of butter, green vegetables and fresh fruits, in addition to the usual amount of meat or fish and enough starchy foods, such as bread, potato and cereals, to supply the needed heat and energy. Sweets are to be avoided, as they not only crowd out more valuable foods, but also may be positively harmful in themselves. A whole wheat bread or whole grain cereal combines salts, vitamins and the energy producing starch to much greater advantage than a bread or cereal from which these important elements have been removed by milling.

These brief remarks as to the management of the growing child during a difficult period of development are made as suggestive of the manner in which it seems to me the problem should be attacked. There is, after all, nothing particularly new to be found in them. They have always been practiced by those parents and teachers who have been most successful, and furthermore they form the basis of the routine care which all breeders use in the rearing of young animals. It should be said, however, that while these measures will prove effective in preventing the development of most dysmenorrheas of this type, cases in which the dysmenorrhea has become thoroughly established will usually require operation before the function can be returned to normal.

CONGESTIVE CAUSES

With this brief description of the failures of development and of some of the ways in which they may be avoided, let us pass on to the second subject in our classification, namely, the congestive group. Before speaking of the prevention of the types of sterility that are caused by congestion, it is necessary to say a few words about congestion itself, and to explain the sense in which this rather ambiguous term is here used. Unless qualified in some way, congestion calls up in the minds of most of us associations with infection or inflammation. It has, however, a much broader implication in its meaning of increased blood supply. Used in this sense, it may mean increased arterial blood, in which case it is called active congestion, or it may mean an increase in the venous blood, when it is spoken of as passive congestion. The pelvic organs, in particular, are peculiarly liable to normal recurring active congestions. Those which precede the catamenia and those which accompany coitus and pregnancy may be mentioned, and these are normal and harmless. There are, on the other hand, causes—both functional and pathologic—which

tend to produce passive congestion, and this is very apt to become chronic. It goes almost without saying that such pathologic conditions as prolapse of the uterus or laceration of the cervix or large fibroids may cause sufficient congestion to interfere with conception. In the same category must be classed those cases of retroversion in which there is real interference with the circulation, sufficient to produce chronic congestion. The mechanism in these cases is set up by an interference with the venous return rather than with an overfrequency of the normal active congestion, and of these we need not speak here because no methods of prevention are yet known.

In addition, however, to the causes of congestion mentioned above, which may be classed as of pathologic origin, there is an even more important class of functional origin, which is preventable. The first of these is produced by irregularities in the marital habit. Overfrequency in either sex fails to allow the entire disappearance of the active congestion which normally accompanies coitus. A little congestion persists, and in time this produces changes in the character of the secretions, particularly those of cervix or prostate, which prove injurious to the vitality of the spermatozoa. It is a rather remarkable fact that both deprivation and overexcitation without relief have the same effect. In either case, the undue persistence of an active normal congestion must in time lead to the appearance of the harmful, chronic type. The continued presence of this chronic congestion eventually produces changes in the secretions of either sex, such as an abnormal amount of mucus or a great increase in the number of leukocytes.

The secretions commonly affected are, as has been said, the cervical in the female and the prostatic or vesicular in the male. More serious than any gross changes, which are evident on inspection, are those biochemical changes which render the secretions hostile to the spermatozoa. Any abnormality of the marital relation may produce some of these changes by causing a chronic congestion, for instance, even habitual failure of complete orgasm may act as such a cause, owing to the absence of the proper physiologic relief from the normal preliminary engorgement of the blood vessels.

It seems fairly obvious, therefore, that, since many of these sterilities of congestive origin are primarily due to irregularities of function in married life, their prevention can be brought about only by a fuller understanding of the normal physiology of marriage. The time for such knowledge to be most effectively given is before marriage. It always comes best from the family physician, and it behooves the medical profession to see that adequate instruction in such matters is given to all medical students so that later, when the need arises, they may have the necessary knowledge to give worth while advice. Just what the character of the actual advice to be given patients before marriage shall be will naturally vary with the individual case and according to the physician's best judgment as to a given couple's needs. It should include full caution as to the dangers of overfrequency or undue restraint. It is often unnecessary and unwise to go into too great detail at this time, but, once the ice has been broken, the couple will feel that they have some one to whom they may subsequently go for advice, if this should prove necessary. At the time when any premarital instruction is being given, it is not uncommon for the question of physical examination to be raised. We believe that this is a most important matter, but one

which, in the nature of the case, should not be unduly urged by the practitioner. It is rather for the patients to be educated to the benefits to be derived from such an examination, so that they will request it. If such an examination is desired, it should obviously include, in addition to the routine physical and blood examinations, a careful local examination of the pelvic organs in either sex. The details of such an examination need not, of course, be dwelt on further than to urge that a careful search be made for such abnormalities as tight hymen in the woman or the presence of trouble in prostate or seminal vesicles in the man.

In addition to the chronic congestions arising from abnormality in the marital relation there is the functional congestion which accompanies normal pregnancy and which occasionally, when extreme, for one reason or another, may act as a cause for repeated miscarriages, and in this indirect manner may therefore be considered as among the causes of sterility. Active congestion is, of course, normal during any pregnancy, but during the early months this is occasionally increased by some interference with the normal venous return. These patients are apt to complain of extreme backache, and there is a tendency to have a little flowing now and then. They are very susceptible to fatigue. These symptoms usually persist into the fifth month, but soon disappear as the uterus rises out of the pelvis. If they are neglected miscarriages are very apt to occur, and they are mentioned in this connection only because, if precautions to keep the congestion at a minimum are taken, the danger of miscarriage is much diminished.

INFECTIVE CAUSES

We have now completed our discussion of the first two classes of sterility, namely, the developmental and the congestive, and the means by which they may often be prevented, and we come to the third class, which is caused by some form of infection. In thus separating the various causes of sterility into artificial groupings, one runs a certain amount of danger, because it is rare in practice to be able to classify a given case under a single heading. It might, for instance, seem that the infections that are now to be taken up are to be considered as entirely separate from the congestions, whereas the exact opposite is the case. The type of infection in which we are most interested in a discussion of prevention almost invariably follows a preliminary congestion, and therefore, from the point of view of prevention, the particular type of infection is only of secondary importance. I am well aware that the infection which is most often seen as a cause of sterility is that produced by the gonococcus, but since the prevention of this type of infection is so obvious, and is already a matter of public concern, I shall pass on at once to a discussion of those milder forms which are less commonly recognized. These infections are presumably caused by some of the less virulent strains of the common pyogenic organisms, since they rarely, if ever, cause any symptoms. Even the mildest of them, however, is extremely important from the point of view of sterility, because of the biochemical effect they may have on the vitality of the spermatozoa, and hence on the fertility of the person concerned. Since, as has been said, they rarely, if ever, produce symptoms or have a recognizable acute stage, it is impossible to give a precise description of the conditions that are primarily at fault, but there seems to be no question that congestion is the chief predisposing factor and that the type of the ultimate infection is, as a rule, entirely accidental.

The common location for these milder infections in the male is in the prostate or the seminal vesicles, or both. The presence of the infection is indicated by finding pus in the semen or expressed prostatic secretion, and by its biochemical effects on the vitality of the spermatozoa. Similarly, in the female, the common location is in the glands of the cervix, and is shown by heavy leukocytosis, sometimes amounting to actual pus, in the secretion from that organ. As with the male, such infected secretions are hostile to the spermatozoa. Not infrequently, such infections are found to have involved the tubes, but this is much less frequently the case than with gonorrhea, and it is less common to obtain a history of acute symptoms.

As has been said, and as is of course well recognized, gonorrhea is an important cause of sterility. It is less commonly recognized, however, that secondary infection of the prostate or vesicles may persist long after the gonococci have ceased to be present. Such cases of prostatitis, while incapable of transmitting gonorrhea, may be serious matters in their effect on fertility, both because they reduce the vitality of the spermatozoa, and because they may act as sources of infection to the woman.

These mild, nonspecific infections of the female genital tract may be only evidenced symptomatically by the presence of a slight leukorrhea. Many leukorrheas are undoubtedly of very little importance to health, but the presence of a leukorrhea should never be accepted as normal or of little moment to fertility. Sometimes a leukorrhea is the result of congestion only, and merely serves to call attention to the abnormality of function that is causing the congestion, but more often it points to one of those mild cervical infections of such low grade as not to affect health, but severe enough to alter secretions and produce sterility.

The prevention of sterility from infection resolves itself into the prevention of the several factors which make up the general subject and which we have just discussed. In the first place, the prevention of gonorrhea must always remain of the utmost importance. When gonorrheal infection has taken place, marriage should not be permitted until a complete cure has been effected. From what has been said on the secondary infections that are so apt to be present in the prostate, it will be seen that a premarital examination which searches only for active gonococci will be entirely inadequate for the prevention of sterility. Such an examination must rule out all possibility of secondary infection as well, and should always be checked up, when there is any question, by an examination of the semen itself, for it is often only by examining the semen that the evidence of infection is discovered and an estimate of fertility can be made. The prevention of the nongonorrheal infections of the genital tract in either sex depends mainly on the prevention of congestion and has been spoken of under that head.

CONSTITUTIONAL CAUSES

Finally, there is a fourth and last group of sterilities, which are of constitutional origin. This group is perhaps less well understood than any of the preceding ones, but for that reason it is not to be dismissed as of less importance. It must be remembered that the reproductive function is, after all, a function that is more truly dependent on the general state of health of a given individual than is any other. Anything that seriously affects the life or health of the individual may in fact indirectly affect the function of reproduction.

Attention to diet, general hygiene, exercise, etc., and the elimination of all possible foci of toxic absorption are just as important in the prevention of sterility as they are in promoting general health and longevity. There is one factor that must be included under this general constitutional heading, which is so important that I wish to say a few more words about it. I refer to the psychologic, or nervous, factor, which has become so important in our modern life. Nerve strain has become a very definite cause of sterility or, rather, of low fertility. This is particularly common among business men who have attained to a certain degree of responsibility in their chosen line. They begin to worry, take their business home, and live, eat and sleep with it. At the same time, they cut down on exercise and allow their bodies to get entirely out of training. In many instances, a marked lowering of fertility occurs. The prevention is obvious, but it requires physicians with the courage to go out and tell these patients how much damage they will do themselves if they keep on with their bad habits of living. Worry and nervousness in the woman are equally important in the derangement of function. It is not at all infrequent to find pelvic congestion of a most extreme type, with no other cause than worry and the unsatisfied desire for children. There is also a good deal of clinical evidence that non-function of the ovaries may be produced from the same cause. The end-result of this failure of ovulation is seen in the so-called "retention cyst" ovaries, and it is an interesting clinical observation that such ovaries are seen only in the nervous, emotional type of woman. Nerve strain, then, may be an important cause of lowered fertility, and its prevention will be valuable in eliminating certain types of sterility.

CONCLUSION

There are several points that should be emphasized. The first is that we are dealing with a real problem and a big one. Sterility is too important biologically and economically to be neglected. The problem is there, but we have not been facing it. We have treated the effects and not the causes, and the causes will go on producing effects until we remove them. The real problem is not how to deal with sterility, but how to prevent it before it develops. In this paper, I have tried to point out a few of these effects and to explain the causes that have produced them. When we know the causes, it is as a rule fairly easy to avoid them. What we need is more knowledge, and this knowledge must be spread by the specialist to the family physician and by him to the laity. There is a growing demand among people of intelligence for more light on these matters, and it is the duty of the medical profession to supply that light and not leave this important field to quacks and charlatans.

321 Dartmouth Street

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. MAYO,* ESTES AND MACONIBER

DR. J. B. DeLEE, Chicago. In our gynecologic work, we see not a few cases with symptoms of appendicitis in which the uterus is attached to the right side of the pelvis. We also see conditions that gynecologists call *chronic parametritis*, but it is difficult to prove these cases at necropsy or at operation. We have not found *parametritis* associated with acute appendicitis, but in the chronic cases we often obtained a history of one or two attacks. The inflammation may have proceeded from the appendix along the so-called Clado's ligament. That

* Dr. Mayo's paper was published last week on page 592.

the appendix can cause pelvic inflammation by contact is a well established fact. Regarding Dr Macomber's paper I believe that a great many of these cases are congenital if not hereditary. There is a great difference between congenital and hereditary conditions. A woman can have fifteen children, and four or five of them can be congenitally deficient in one organ or another. There is such a condition as familial sterility and dystocia. Several children of the same mother will have contracted pelvis and small uterus. It is due to an inherent lack of the reproductive impulse. Regarding the cause of the lack of development of the uterus I think the doctor did not go back far enough. He should go back to the baby before it is born. The general health of the mother during pregnancy has a good deal to do with the development of the child. Her living conditions and nourishment have a great deal to do with its growth and strength. He should go back to the young infant in arms, to the infections in the earlier days of life, the infections of the uterus causing inflammatory conditions, and other conditions producing malnutrition of children even when nursing at the breast. I am old enough to see the children that I delivered, grown up. Some who suffered from malnutrition in early life are now showing maldeveloped uterus and maldeveloped pelvis. In giving the prognosis as far as pregnancy with chronic infections is concerned, a great deal more can be said than the paper contained. When the husband has an infected prostate, there is plenty of reason to explain why his wife is sterile. Besides making her sterile, he is keeping up her chronic cervicitis and salpingitis. We may cure the two as often as we will, but as soon as she goes back to her husband she gets a reinfection. One of the best cures for cervicitis is to send the husband to a genito-urinary specialist. Regarding Dr Estes' paper, I have never used the operation he mentioned. I have split the cornu of the uterus and have sewed the tube to it so that there was an opening into the uterus, and then have sewed the ovary into that cornu. I regret to say that none of these women became pregnant. I have done another operation. I have anchored the ovary where the tube ought to be, and then tried to sound the tube, running a probe into the uterus. When I thought I had succeeded, I have pushed the probe through the uterine wall and brought it out on the anterior surface of the uterus, then attached four strands of forty-day chromic catgut to the probe and pulled it back through to the neighborhood of the ovary and left the ends at the outer opening. The puncture in the anterior wall was closed with a suture. The intention is to produce a utero-abdominal fistula. It is sometimes possible to do this with catgut. We do it sometimes when we do not want to, in sterilizing women after cesarean section, they sometimes become pregnant. In quite a number of cases in which I performed this operation, not one of the women became pregnant.

DR RUDOLPH HOLMES, Chicago. Sterility is not a problem of the female alone. It is also a problem of the male. It is, therefore, a dual problem with every couple. Any study of sterility in the female is worthless unless one studies jointly the male. There are two broad classes, absolute and relative sterility. The absolute is that in which there is an impermeability of the tubes. In such cases, removal of the gross pathologic condition does not always cure the sterility. Without a more definite knowledge of what processes produce conception, we can say practically nothing about sterility or its antithesis—fecundity. Dr Macomber has covered very adequately the pathologic condition in women. He has referred in only a very minor degree to men. A man who, after repeated examinations, has an absence of spermatozoa is probably definitely sterile. A man who has very active normal spermatozoa living for half an hour on a warm glass may be regarded as normal, but he may be unable to fertilize the ova of his mate. For instance, I have had two patients who became dissatisfied in their marital relations, and they merely swapped husbands. Both had been sterile with their original husbands both immediately conceived with the second. This problem is so definitely associated with biochemical processes that I believe no operation is justifiable in women for these minor affairs or diseases that promote sterility until the man has had repeated examinations. I would not consider using

a Rubin procedure until the man had been repeatedly examined as to the motility of the spermatozoa. I can say that nine times out of ten when a woman comes to me for sterility and I say to her, "I want to talk to your husband," the husband will not come. He thinks because he is virile that it is an impeachment on his manhood, and he will refuse to go to a genito-urinary specialist to see whether he is normal. He is perfectly willing to subject his wife to repeated examinations and to the risk of an operation, but he will not be examined himself.

DR ROBERT T. MORRIS, New York. Dr Mayo's observation that infection does not extend from the appendix to other organs is timely. Infection sometimes extends from other structures to the appendix. I have called that type extrinsic infective appendicitis in contradistinction to ordinary intrinsic infective appendicitis. When we have infection at distant points simultaneously, with involvement of the gallbladder and pylorus, we must go back to Rosenow's observation in relation to the elective affinity of the appendix, gallbladder and pylorus for toxins the infection developing synchronously in two or three organs from some focus of infection, perhaps a distant one. My experience has not been wholly like Dr Macomber's, I have better persuasive powers with men and get them to go for an examination in regard to their own part in sterility. If we are going to introduce this biochemistry feature, we are going to have more complications in divorce courts and on a physical basis. Dr Estes' procedure is well done. The pragmatic feature of pregnancy is the important thing, after all. When I have split the uterus and put in ovarian grafts both in women and experimentally in animals, I have found that the graft usually disappeared even in homoplastic grafting. With the latter we have avoided precipitate menopause which is a definite advantage. We sometimes gain the same point from heteroplastic grafting but it is not practical, on the whole. Dr Estes' method of homoplastic grafting is the best I have heard of. In pyosalpinx I have not removed ovaries or tubes for some years. In the acute peritonitis stage, I have depended on Clark's opium treatment and then have opened abscesses, split the tubes wide open clear down into the uterus, and fastened them to the anterior abdominal wall, put in a drain and let them drip like a maple tree in March. Meanwhile the patient has been put on vaccines and locally in the vagina hygroscopic astringents. Under this treatment, the great big ragged bleeding mass in which one could hardly tell the ovary from the tube will in the course of three months clear up, and one will find that the tube that was split open has become round. In cases in which no fimbriae were seen new fimbriae are often present. Some months later, when the time comes for releasing the tubes that were fastened to the abdominal wall if an ampulla does not show new fimbriae we split a clubbed end open again and cover it with thymol iodid. Nature is bound to restore the oviducts, if we give her a chance. It is surprising to find to what extent Nature gives back good function. These women are capable of having pregnancies, some of them extra-uterine, to be sure. I had one patient who had an extra-uterine pregnancy one year after this operation and the next year she had a normal pregnancy from the other side. The extra-uterine complication was much better than having tubes and ovaries thrown into the waste basket because they looked bad at the time of the first operation.

DR F. F. LAWRENCE, Columbus, Ohio. There are probably more cases of overlooked and neglected appendicitis of the mild or chronic type than any other condition within the abdomen. Dr Mayo has called attention to them in his paper. I spoke yesterday in another section of bile tract infections, which, in a large number of cases, are the result of a moderate or chronic form of appendicitis. As Dr Mayo mentioned, contrary to the older theory of appendicitis being due to the colon bacillus the great majority if not all the cases are due to the streptococci or mixed infection developing not within the mucosa but within the wall of the appendix. If one recalls the anatomy of the portal circulation and its lymphatic accompaniment, it will be remembered that the mesenteric veins with the accompanying lymphatics carry the infection from the lower intestinal tract into the liver and into the upper quadrant.

of the abdomen Dr Mayo stated that the lower abdomen was practically never infected as a result of appendicitis, except by contiguity of tissues. About 5 per cent of all cases in women have a continuous meso-appendix and meso-ovarium, not only the circulation but also the lymphatics being continuous. In that 5 per cent, one may have a direct infection of the pelvic structures on the right side, tube, ovary and broad ligament, coming from the acutely inflamed appendix. One should keep in mind the sympathetic nervous system, with the pneumogastric coming down along the colon with its sympathetic connections and the branch from the solar plexus which supplies the stomach, duodenum and hepatic region. It should be remembered that, in cases of constant irritation, hypersecretion is produced and, consequently, in these chronic cases of appendicitis there is not only a hyperacidity but a hypersecretion. The cases have not stopped the secretions, they only increase them and favor the development of gastric and duodenal ulcer, frequently with fatal termination by hemorrhage, particularly when the ulcer extends from the pylorus down into the duodenum. One of the most important things is to keep in mind another thing, that every infection, whether in the appendix or somewhere else, has for its foundation a trauma. The appendix is most subject to trauma of any organ. The consequence is infection is more likely to occur from it, either acute or chronic, than from any part of the abdomen.

DR DONALD MCOMBER, Boston. Dr DeLee mentioned familial sterility, but I think he overlooked the fact that all members of the family are subject to the same environmental influences as well as to heredity. I am rather doubtful about such a thing occurring. There certainly can be no question that malnutrition may be the cause of faulty development of the pelvic organs. I think it is more frequent that malnutrition during puberty rather than during infancy is the cause. I agree with Dr Holmes that it is important to examine the man in every case. It is very important that the one man examine both man and woman. I think many cases fail when the men are referred to another specialist. I have found very little difficulty in having the men come in. I want to make one other point, and that is that in the past it has been the custom not to consider a case one of sterility until some years have elapsed after marriage, and if a couple consult a practitioner before that time has elapsed, they are very apt to be turned away and told to wait a little longer. I believe that it is a dangerous thing to tell the patient this. It is the early treatment in these cases in which there is some functional disorder that prevents subsequent sterility of a pathologic nature from developing. If one wants to prevent sterility one should examine the patient early. One should remember that normal persons have difficulty in preventing pregnancy that pregnancy occurs at will. If one finds that pregnancy does not occur, certainly an examination should be made to determine the cause, because it is on those cases that one can do the most, and very seldom is operation required.

DR W L ESTES, JR, Bethlehem, Pa. There are only two points I want to touch on. One is that Tuffier's operation or the uterine horn splitting operation requires that the pedicle giving the blood supply to the ovary be preserved. When the ovary is completely detached and implanted in the uterus, it has been necessary to remove the uterus by hysterectomy later on, and complete atrophy of the ovarian tissue has been found, nothing but fibrous tissue was left. As for the point Dr Morris brought out with regard to splitting the tube in a patient with pyosalpinx, mention of that was made in my previous paper. I am very grateful for his statement that pregnancy has been obtained by this procedure.

Sea Food Polluted by Oil—The only taste acquired by sea food in the presence of oil pollution has been frequently observed. It is stated that clams and other sea food not only fail to reach the proper maturity under such conditions but apparently contain a perceptible amount of the contaminating material, even after the food has been cooked. It is understood that shellfish taken from Jamaica Bay, N Y are not permitted to be sold, because of the very badly polluted condition of the waters in this locality caused by sewage and oil.—*Pub Health Rep* 39 1658 (July 11) 1924

SPONDYLITIS FOLLOWING CEREBRO-SPINAL MENINGITIS*

R WALLACE BILLINGTON, MD

Associate Professor Orthopedic Surgery, Vanderbilt University
Medical Department

NASHVILLE, TENN

This paper is based on a study of thirty-five cases in which there was the complaint of persistent back symptoms dating from attacks of acute meningitis. Thirty-three of these patients were ex-service men whose trouble began during the World War and who

came under my observation during the last five years while I was acting as consultant to our local unit of the Veterans' Bureau. The other two were seen while I was in civil practice, one a boy, aged 12, who had had meningitis five years before, and the other a man of 32, the onset of whose trouble dated back fifteen years, both had had pain and stiffness in the lumbar spine ever since. These two patients were seen by courtesy of Drs Jack Witherspoon and W C Dixon.

In a paper on "Low Back Pain" read before the Southern Medical Association in November, 1922, I¹ referred to some of these cases and considerable interest was expressed by some of those present, with the request that I make a fuller report of my findings. This, and the fact that I have not been able to find any

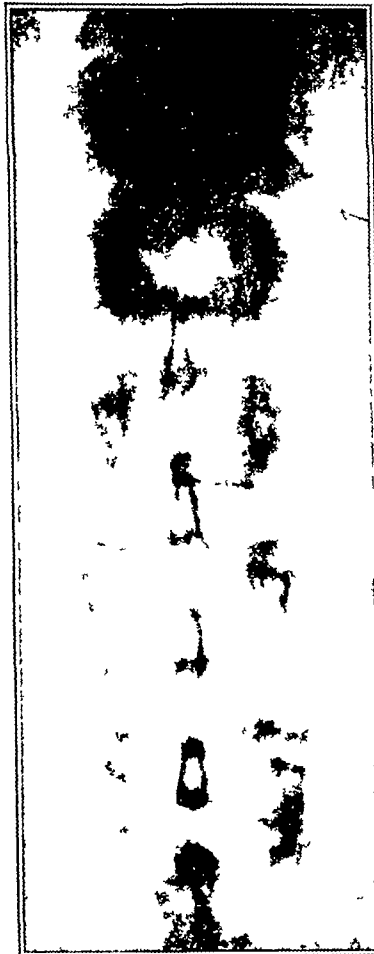


Fig 1—One of the two cases in which the pathologic change was not limited to the lower lumbar spine. There is slight lipping at the third and fourth lumbar vertebrae more marked at the joint between the first and second lumbar vertebrae where the disk is also damaged.

reference in the literature to spinal pathologic conditions attributable to meningitis have prompted me to present these observations here for what they are worth.

For the sake of convenience and brevity in this discussion, I have divided the thirty-five cases into three groups: (1) patients with spinal osteoarthritis with positive roentgenograms, (2) patients with physical signs of spondylitis, but with negative roentgenograms, and (3) patients with no definite signs of spondylitis.

* Read before the Section on Orthopedic Surgery at the Seventy-fifth Annual Session of the American Medical Association, Chicago, June 1924.

¹ Billington R W. *South M J* 16 478 (June) 1923.

PATIENTS WITH SPINAL OSTEOARTHRITIS

Group 1 includes fourteen cases, in all of which definite roentgen-ray evidence of spinal osteoarthritis was obtained, this includes the two civilian cases already mentioned

The ages of the patients, with the exception of the boy whose age was 12, ranged from 22 to 35 years

All had had numerous spinal punctures and antimeningitic serum. All complained of persistent pain and stiffness in the lumbar spine, beginning either during the acute or during the convalescent stage of the meningitis. Active foci of infection were found in only two, and only one patient had had other arthritis (hip joints). In four, the pain was in the lower back only, the other ten having in addition more or less pain referred to one or both of the lower limbs. One had sensory changes over the outer leg, with sciatic tenderness and absent knee-jerk, one had peroneal weakness, and two had exaggerated knee-jerks. The other ten had normal reflexes in the lower limbs. Six had frequent headaches. All had more or less stiffness of the lumbar

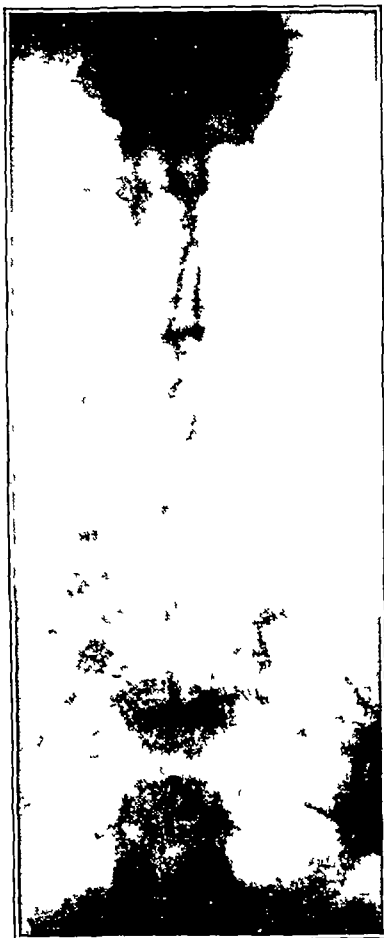


Fig 2—Marked lipping of the third and fourth lumbar vertebrae and partial destruction of disks between the third and fourth and the fourth and fifth

spine. Ten had guarded body movements and involuntary spasm of lumbar muscles. Ten had straightening of the lumbar curve (flat back), and two had fixed lumbar scoliosis. Disability was extreme in eight, and moderate in six. Four had worn spinal braces or jackets, and all had had more or less treatment for back conditions, such as antirheumatic remedies, strapping and physiotherapy. In one of the most severe cases, in which there was partial destruction of the disk between the third and fourth lumbar vertebrae, I did an Albee spinal graft operation four years ago, with complete relief of the pain in the back. He still has occasional headaches and tires easily.

Probably the most interesting feature of this group was the roentgen-ray findings. In twelve of the fourteen cases, the pathologic changes were limited to the lower lumbar spine (third to fifth vertebral bodies and disks). These changes consisted of lipping, spurring and other hypertrophic changes in all of these twelve cases, while in seven there was also the thinning or

destruction of a disk between the third and fourth or between the fourth and fifth lumbar vertebrae, together with roughening of adjacent body surfaces. In one case there was slight hypertrophy in this region, plus a thin disk and distinct lipping at the joint between the first and second lumbar, in the other, a general hypertrophic spondylitis as in the ordinary deformans type. In none did the picture suggest Pott's disease, and none showed any evidence of psoas or lumbar abscess.

PATIENTS WITH SIGNS OF SPONDYLITIS WITH NEGATIVE ROENTGENOGRAMS

Group 2 includes five cases, in which the ages of the patients ranged from 24 to 28 years. There were fairly definite symptoms and physical signs of spondylitis without positive roentgen-ray findings, although in two cases the roentgenograms were suggestive of very slight hypertrophic changes in the lower lumbar vertebrae. The symptoms and signs were generally less marked than in the previous group, but were otherwise very similar. All the patients had had several spinal punctures and serum treatment, and pain and stiffness in the lumbar region had been constant ever since. In only one case was pain referred to the lower limbs. Three patients had had repeated exacerbations of symptoms. No infectious foci were noted, and none had a history of other arthritis. No atrophy or sensory changes were found. All had limited and painful lumbar movements and muscle spasm. The only deformity was one straightened lumbar curve. Disability was marked in four patients, and moderate in one. Two had worn spinal braces, and all had received more or less palliative treatment. This group of patients appeared to have a mild degree of spondylitis, chiefly lumbar, without sufficient bone or joint changes to show in roentgenograms.



Fig 3—Hypertrophy of the fourth and fifth lumbar vertebrae and destruction of the disk between the fifth and sixth. This man's trouble began with meningitis fifteen years before.

PATIENTS WITHOUT DEFINITE SIGNS OF SPONDYLITIS

Group 3 includes the other sixteen patients who showed very slight or no spinal stiffness, muscle spasm, guarded movements or persistent faulty posture, i e,

no definite signs of spondylitis. Roentgenograms made of a few patients were negative. Their ages were between 23 and 34. One of them had a partially stiff wrist joint resulting from a mild suppurative process occurring during convalescence from the meningitis. They complained of some or all of the following symptoms: low back pain, which was worse on exertion, headaches, general weakness, nervousness, pains, weakness and numbness in the lower extremities. This group is rather indefinite and will not be discussed here, but it probably includes psychoneuroses, malingerers and some who may have had a mild spondylitis.

COMMENT

That the meningococcus can produce an arthritis has been demonstrated in the case of other joints. As early as 1898, Still recovered the organism from a joint so infected, and Gwyn did the same the following year. Herrick and Parkhurst reviewed in 1919 a series of 321 cases of meningococcic arthritis of various joints of the extremities, some of these containing a viscid and semipurulent exudate. Sainton and Bosquet and Rogu have reported cases resulting in ankylosis of the knee, hip and shoulder. Only one of my patients had a joint, other than of the spine, involved; this was the wrist joint referred to in Group 3. In this case, healing was accomplished when I saw the patient, and, of course, evidence could not be obtained bacteriologically. However, the occurrence and the course suggest this origin.

The older writers, before the days of antimeningitic serum, referred to arthritis as a fairly frequent complication, but I have found no special reference to spondylitis. I have wondered whether arthritis of other joints (which is metastatic) has been less frequent since the use of the serum treatment, as it appears from this series, and whether spinal arthritis has become more frequent, as the result, possibly, of trauma or the direct inoculation of the spinal structures by the needle in spinal punctures. The localization of demonstrable pathologic conditions in most of my patients (twelve out of fourteen) in the lower lumbar spine is strongly suggestive of the latter. Not infrequently, in making spinal punctures the point of the needle is thrust against the anterior wall of the spinal canal after it has passed through infected tissues within the canal, producing an ideal means of inoculating the vertebral bodies or disks in this region. If the spondylitis were due to trauma alone, or to extraneous infection carried in by the needle, we should expect to find this condition resulting from punctures for other conditions, such as those employed in the diagnosis and treatment of syphilis. While I have made extensive search and inquiry, I have not found a case in which this has occurred.

It has not been demonstrated bacteriologically that the meningococcus was the causative organism in any of this series of cases, all of which were seen long after the stage of active infection. Indeed, it would seem practically impossible to obtain exudate or other tissues for such study even during the acute stage, except at necropsy. I do not know whether such study has ever been made. I hope that this report may cause some one to make this investigation when the opportunity is afforded.

Although most of these are compensation cases and are thus open to the suspicion of malingering or of the patient's trying to establish a false connection between the meningitis and the spinal disease or complaint, I am convinced that, in practically all the cases listed in Groups 1 and 2, there was a very definite relationship between the meningitis and the beginning of the back trouble.

The histories and reexaminations of many of the patients, covering a period of from five to fifteen years after the onset, show the usual course to be one of severe back symptoms during the first few weeks or months, followed by more or less gradual improvement, often with exacerbations, leaving the patient more or less permanently disabled. This would seem to be of particular interest to the Veterans' Bureau.

The man on whom I did a spinal graft, though his was one of the most severe cases, with marked destruction and hypertrophic changes at the joint between the third and fourth lumbar vertebrae, made an unusually good recovery after being practically totally disabled for two years. One such case, of course, is not conclusive, and this plan of treatment should probably be reserved for the more intractable cases, at least. Those patients who wore jackets or well-fitted braces obtained more or less relief from them. From this, it would appear that plaster or celluloid jackets should be applied early, before the patient begins to get about, if he has

marked pain, stiffness and muscle spasm in the lumbar region. Roentgenograms made at that time may be negative, but this should not delay the immobilization, which would not only add to the patient's comfort, but might lessen the amount of permanent damage to the spine by the disease, whatever its origin. Granting the possibility of needle punctures as a causative factor, particular care should be taken to avoid pushing the needle point far enough to strike the anterior wall of the canal, or otherwise traumatizing any part of the spinal column. This will, no doubt, often be unavoidable.

SUMMARY

In nineteen cases there were definite clinical evidences of spondylitis. In fourteen of these there were positive



Fig. 4—Hypertrophic changes at fourth and fifth lumbar vertebrae, and involvement of the disk between.

roentgenograms, and twelve of the fourteen showed pathologic changes only in the lower lumbar region (third to fifth), these changes were hypertrophic in all twelve, and in eight of the twelve there was also partial or complete destruction of a disk in the same region.

These facts, together with the histories, especially, when the ages of the patients, the time and nature of the onset, and the course of a subacute arthritis of the spine are considered, seem to me to form a fairly definite picture, differing from that of other types of infectious spondylitis and pointing to the meningococcus as the causative organism. Since spinal joints are susceptible to practically all the other varieties of arthritis found in other joints, there appears to be no reason why the spine should be immune to the meningococcus.

Moreover, the spinal puncture needle may easily afford a direct means of inoculating the lower lumbar vertebrae and disks with the meningococcus and, in view of the location of the pathologic conditions in the cases recorded, it appears very probable that it is an important etiologic factor. The two cases in which there were pathologic changes in other regions may represent metastatic infections, such as occur in the involvement of joints of the extremities, though apparently less frequently.

Treatment should be early and prolonged immobilization.

Clinical Notes, Suggestions, and New Instruments

THE TREATMENT OF INGUINAL HERNIAS IN YOUNG INFANTS

L. CHARLES ROSENBERG, M.D., NEWARK, N. J.

The treatment of inguinal hernias in infants only a few weeks old is always difficult. Appliances for this purpose are numerous. The most popular are the old-fashioned steel truss and the newer yarn truss of Fiedler.

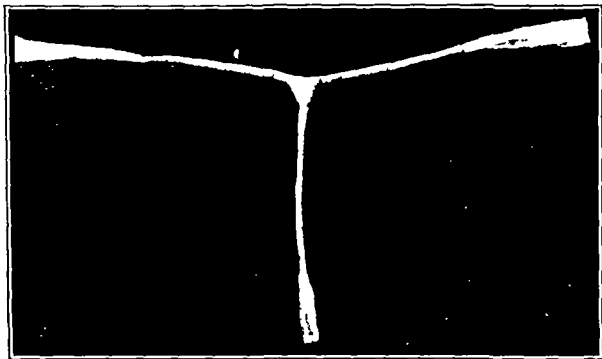


Fig. 1—Truss for inguinal hernia in young infants

Objections to the former are many. It is cumbersome and generally fails to accomplish its purpose. The objections to the latter are that some skill and experience are required for its proper application, and this is usually not possible for the average mother.

The great objection however to these and all other varieties is excoriation to say nothing of the danger of infection. This is especially true in the case of the wool truss which becomes soaked with urine and feces.

Any truss applied to very young infants particularly those that are premature must be soft so as not to irritate the tender skin. It must be simple enough so that it can be changed by

the mother when it becomes soiled, and it must keep the hernia reduced.

A truss that answers these requirements consists of a triangular pad stuffed with absorbent cotton. To each corner of the pad there is attached a muslin tube about 1 cm. in diameter and 15 cm. in length also stuffed with cotton. The material used is preferably soft muslin.

To apply the truss, the pad is placed over the hernia and one string passed over each iliac crest to be tied behind in the lumbar region. The third string is brought downward between the thighs and thence backward, and is tied posteriorly

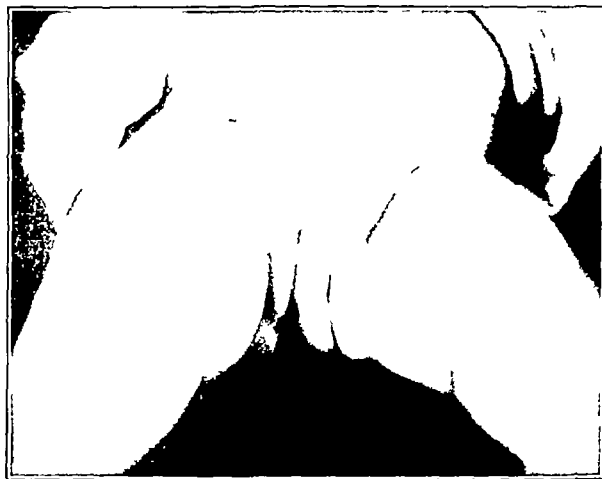


Fig. 2—Truss in place

It may be necessary to use two or three new trusses a day, but devoted mothers do not consider this troublesome, since they are easily made.

When double hernias exist a double pad may be made one to fit over each external ring.

This truss is not recommended for older infants.

39 Lincoln Park

CONGENITAL HYPERTROPHIC PYLORIC STENOSIS IN TWINS

HERBERT H. DAVIS, M.D., OMAHA

H. Leslie Moore¹ recently reported the occurrence of hypertrophic pyloric stenosis in twins. At 4 weeks of age each had a Rammstedt operation. Each did well at first, but this lasted only a few days and they both died of respiratory paralysis, six and eight days after the operation. Moore states that he has been unable to find any other case of this malady in twins in the literature. He also says that it would be interesting to know whether it ever occurred in one twin and not in the other.

In 1919 I observed a similar condition in twin boys, born Oct. 14, 1919, and referred by Dr. Clyde Moore.

REPORT OF CASES

The first infant, did well until 13 days old, when he began to vomit. At that time he vomited practically everything he ate. At birth, he weighed 5 pounds, 12 ounces (260 kg.) and at 2 weeks gained to 6 pounds, 4 ounces (283 kg.) but in a few days before operation lost to 5 pounds, 7 ounces (245 kg.). November 11, at the age of 28 days, a Rammstedt operation was performed by Dr. B. B. Davis. Physical examination at that time revealed considerable abdominal distention, and on palpation, a small hard mass 1 1/4 inches to the right and a little above the umbilicus. Operation showed this mass as was expected, to be the fibrous pylorus. This mass was divided with practically no bleeding. After the operation the weight went down to 5 pounds, 5 ounces (240 kg.) but November 17 the infant was gaining again.

¹ Moore, H. I. South M. J. 17: 187 (March) 1924.

and eating nicely. The weight had increased to 5 pounds, 11 ounces (257 kg) by November 29, when the infant was dismissed in good condition.

T, the second infant, at birth weighed 5 pounds, 14 ounces (356 kg). He was well until 29 days old, at which time he weighed exactly 7 pounds (317 kg). At this time, he began vomiting, and had symptoms similar to those of his twin brother. A small mass could be felt at the location of the hypertrophic pylorus. The upper abdomen was distended, while the lower abdomen was flat. He lost 1 pound (0.45 kg) in five days, weighing at the time of the operation exactly 6 pounds (272 kg). November 17, a Rummstedt operation was performed. The stomach was found greatly distended, and the pylorus hypertrophied and very fibrous. When the fibrous tissue was split, it was found to be nearly half an inch thick. Following the operation, the infant began to eat well and gain weight, and was dismissed, November 29, in excellent condition.

About a year later, the mother came to the office and proudly announced that the twins had just won first prize for twins at a baby show.

1200 First National Bank Building

A LIGHT AEROPLANE SPLINT THAT PERMITS MOBILITY OF THE ELBOW

C. H. BALDWIN, M.D., Utica, N. Y.

Various splints for holding the arm in abduction while treating various conditions involving the arm and shoulder have been described. Many of the splints do not abduct the arm, practically all of them are bulky, many are difficult to hold in position, and none, so far as I have been able to find out, permit free motion of the elbow. In producing any splint or brace that is to be used over a considerable period, there are three things that demand attention: it must be efficient, practical and comfortable.

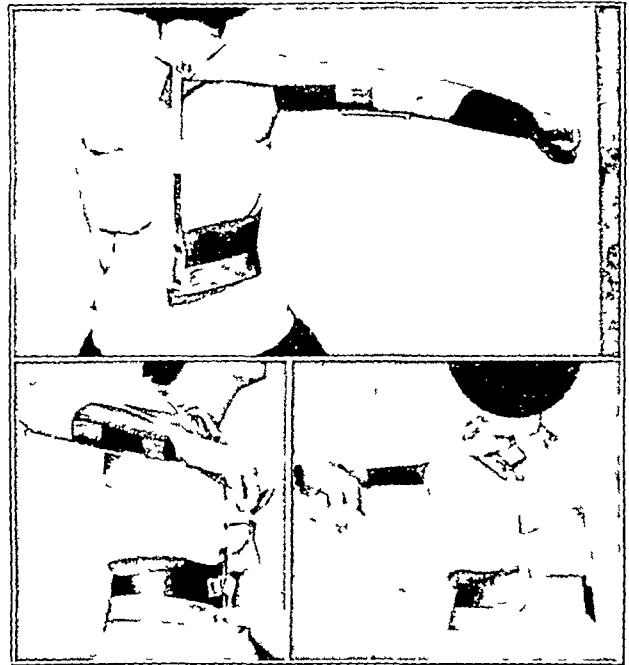
Unless a brace fulfils these requirements, it is in a measure a failure. Removable abduction splints are notoriously uncomfortable and are difficult to maintain in position. Unless they are maintained in proper position, they fail to accomplish their purpose. Fitchet and Thorndike¹ have called attention to the fact that most abduction splints fail to abduct properly the humerus because motions of the scapula are not controlled. They have described a wire splint. I have used the mechanical principle of this splint, but have changed the materials used in order to obtain lightness, more accurate fit and greater comfort. A joint that permits mobility of the elbow has been added. My observations have been, in addition to this, that most abduction splints are difficult to hold in position, as a good grasp of the trunk is not obtainable because the splint does not fit accurately, this being especially true in heavy persons. When made to remain in a relatively good position, the lashings to the body are so many and so complex as to be impractical in the hands of the average individual. The element of comfort has received little consideration. Comfort depends on fit, lightness of construction and broad bearing surfaces. The brace described here seems to fulfil the essentials mentioned. It will hold the arm in abduction, it is light, is not uncomfortable and is readily adjusted. It may be easily and inexpensively made.

The brace consists of a pelvic band extending half way round the body. This band should roughly follow the curve of the crest of the ilium below the iliac crest, so as to obtain a bearing surface on the pelvis. There is an anterior upright, extending from just below the sternal notch to the pubis, and a posterior upright extending from the second or third dorsal vertebra to the top of the sacrum. Horizontal bars extend from the uprights to about 2 inches back of the internal condyle of the humerus, these are connected by a metal band. A simple joint is attached to the under surface of this band. The long arm of this joint extends as a single piece to the palm of the hand. The pelvic

band is made of galvanized iron, gage 16, 1½ inches wide. Horizontal bars are of the same material, 1 inch wide. Uprights are of cold rolled steel, one-half by one-eighth inch. In order to furnish broad bearing surfaces, and not materially increase the weight, vulcanized fiber is used to increase the width of the pelvic band and to make a trough in which the arm lies.

The following measurements should be made with the arm held in abduction and the elbow flexed to 90 degrees: (a) sternal notch to bend of elbow, (b) sternal notch to symphysis pubis, (c) second dorsal vertebra to bend of elbow, (d) second dorsal vertebra to top of sacrum, (e) circumference of pelvis just above great trochanter, (f) circumference of arm above elbow, (g) circumference of forearm below elbow, (h) internal condyle of humerus to palm of hand, and (i) internal condyle of humerus to chest wall.

The following tracings should be made with the patient standing, arm held in abduction, elbow flexed to 90 degrees: (a) sternal notch to bend of elbow, (b) sternal notch to symphysis pubis, (c) second dorsal vertebra to tip of olecranon, and (d) second dorsal vertebra to top of sacrum.



Light aeroplane splint that permits mobility of elbow

Measurements and tracings may be made and sent to the brace shop, or the parts that are to be used in the brace may be bent to the desired shape, the patient being used as the model. The latter method is just as easy as making tracings, and results are more satisfactory. No tools aside from a good bending iron are needed. The parts are plainly marked and sent to the brace shop, together with the measurements. It is only necessary to bend the pelvic band, the two uprights and the horizontal pieces. The brace is held in position by completing the pelvic girdle with a piece of 3 inch webbing. A piece of 3 inch webbing is fastened to the posterior upright, just below the horizontal bar. It is made sufficiently long to pass about the chest, under the anterior upright, and buckle. Two pieces of 1 inch webbing are attached to the upper end of the posterior upright. These pass over the base of the neck and buckle to the top of the anterior upright.

Mechanically it is much easier to construct a brace of the kind described, using flat materials and riveting the pieces together, than to bend a piece of round steel rod to the desired shape and make it fit. The use of flat materials permits the construction of a brace that is sufficiently rigid without the use of a strut between the pelvic band and the elbow or forearm. The omission of the strut and the accurate fit make it possible to wear the brace under a waist or coat.

¹ Fitchet S. M., and Thorndike Augustus. An Improved Aeroplane Splint Designed for the Treatment of Certain Fractures. J. A. M. A. 82: 1120 (April 5) 1924.

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SATURDAY AUGUST 30 1924

THE ETIOLOGY OF MEASLES—A RETROSPECT

With the recent definite promise that scarlet fever will soon be under scientific subjugation¹ the attention of physicians is turned more hopefully toward other baffling maladies that have been somewhat glibly designated as "diseases of childhood." It represents a progressive attitude when even laymen no longer regard them as trifling. There are communities in which they have not yet become "attenuated" in their effects.

Early in the era of modern bacteriology, when almost every succeeding year brought the discovery of a germ responsible for some long recognized disease, we looked forward hopefully to the scientific control of all infection and contagion. With the passage of the years, the persistence of obscurity with respect to the etiology of some of the commonest of human maladies and the repeated failures to find their causative agents have brought about a feeling of discouragement. The etiology of the exanthems of man has in particular remained one of the most perplexing problems in medicine. In one respect, however, the situation that has developed may prove to be beneficial in the long run. Investigators have begun to turn away from the tried and conventional methods of study, to bring new forces for attack, to acquire different points of view as to the possibilities of diseases of microbiotic origin. The "virus" is no longer conceived of as necessarily a typical bacillus or micrococcus, it may be protozoan in type, or it may belong to the still indefinite category of filtrable viruses. The mind of the investigator of today has ceased to remain "single tracked" with respect to etiologic factors, and he is also less likely to be carried away by the hasty report of a reputed "discovery" of the cause of a baffling disease like measles.

It seems worth while, however, to survey the present status of our knowledge from time to time. In a critical review of the problems of the etiology of measles, Sellards² has explained why the clinical features indicate that the exanthem is caused by the presence of a

specific micro-organism and not solely by a toxin. The generalized rashes caused by agents in solution, such as drugs and serums, make their appearance irregularly over the surface of the body. Areas that are widely separated may become involved simultaneously. In measles there is a definite and rather gradual progress of the rash from the uppermost parts of the body downward over the trunk, arms and lower extremities.

Nevertheless the search for the parasitic invaders by microscopic examination has failed to demonstrate constantly or consistently present forms in the Koplik spots or skin lesions of measles. Microscopy of the blood has likewise afforded only negative results, yet there are evidences of the presence of the virus in the blood stream, if one may trust the reports of experimental inoculation of measles in man with the blood of measles patients.³ The tests on animals have proved somewhat unsatisfactory because of the difficulty of identifying the exanthems. The "experimental measles" produced in monkeys by various sorts of inoculation are suggestive, though they by no means offer exact proof of the susceptibility of these animals to the human disease. The conclusion that the virus of measles is filtrable rests primarily on such animal tests. Sellards prefers to consider the filtrability an entirely open question. He states that the symptoms in rabbits appear even less definite than those described in the monkey, and the evidence that the virus survives in rabbits rests, in large measure, on the reinoculation from rabbits to monkeys.

Acceptance of the susceptibility of rabbits and guinea-pigs to measles or even the survival of the virus in these animals, is not warranted on the evidence that has been submitted.

At most, then, it can be said that the symptoms of measles, the mode of infection and the resulting immunity suggest that the causative agent is not a typical protozoan, it may not unlikely prove to be a member of the general group of bacteria or the bacteria-like micro-organisms, either visible or ultramicroscopic. The fever, leukopenia and rash, either of the skin or of the mucous membranes seen in the monkey experiments and regarded as characteristic of experimental measles, Sellards regards as too mild to determine convincingly the etiologic relationship of suspected micro-organisms isolated from patients.

Sellards' outlook on the cardinal problems yet to be solved in measles includes the demonstration of the causative agent, its cultivation, and the infection of lower animals in such a manner as to provide a reliable and practical method for the recognition of the virus. By contrast with measles, Sellards points to a disease, such as spotted fever, in which the causative organism is readily demonstrated microscopically in tissues, and which produces in guinea-pigs a fatal infection with characteristic lesions. In any attempts at cultivating this organism, he adds, suspected cultures can be tested

¹ Scarlet Fever—the Outlook editorial J. A. M. A. 82:1266 (April 19) 1924.

² Sellards, A. W. A Review of the Investigations Concerning the Etiology of Measles. Medicine 3:99 (May) 1924.

³ Hektoen, Ludwig. Experimental Measles. J. A. M. A. 72:177 (Jan. 18) 1919. The Transmission of Measles Through Transfusion of Blood. Current Comment. Ibid. 82:1448 (May 3) 1924.

readily and conclusively. However, in measles, in working on any of the three features just mentioned, it is necessary to contend with two unknown factors. This is the situation in the midst of which we must join to encourage the most patient investigators to remain hopeful and work undismayed with a look forward.

PLASMA PROTEINS IN NEPHRITIS

Studies of nephritis have justified the wisdom of clearly differentiating between the various more or less distinct types of kidney disorder that are involved in the respective cases. Two manifestations, namely, protein in the urine and edema, are observed in many instances and may become the most conspicuous symptoms of the renal impairment. Attention has been directed in recent years, notably by Epstein,¹ to an apparent depletion of the blood in plasma proteins in certain forms of tubular or glomerulotubular nephritis, to which the name nephrosis has of late been applied. He attributes the attendant edema to a fall in osmotic pressure of the plasma consequent on its low protein content. This, together with the urinary loss of protein, seemed to justify replenishment by a more liberal protein intake, thus, the possible therapy of the malady might well be determined by the character of the changes in the protein balance or equilibrium in the body.

A reinvestigation of the problems involved, at the Hospital of the Rockefeller Institute,² shows clearly that there are sharp differences between various types of nephritis with respect to the protein factors discussed. In the vascular-interstitial type, as in nephrosclerosis, there is no decrease in plasma proteins until shortly before death. In so-called "functional proteinuria," likewise, no change was found. In the glomerulotubular or nephrotic renal disorders, however, the total plasma proteins were usually reduced in percentage. The decrease affected chiefly the albumin, the globulin being usually only little diminished and sometimes slightly increased. The fact that in nephrosis the greatest edema did not correspond with the most marked reduction in plasma protein concentration militates against a causative relationship between these two symptomatic factors. Increase in plasma proteins by no means always determined a change for the better in stages of fully developed edema, although, with the disappearance of the latter, an increase usually did occur. Low plasma proteins were always associated, in the New York cases, with considerable losses of protein in the urine, but these did not provide an explanation for all the observations.

It has been suggested that fall in the concentration of plasma proteins is an index of dilution of the blood—"an edema of the blood itself." The observations of

Linder, Lundsgaard, Van Slyke and Stillman³ show that, even when the protein content is much below normal, "hydropic plethora" does not exist. The conclusion seems imperative, therefore, that the low protein concentration frequently observed in the plasma in nephritis is due, not to increased plasma volume but to a decrease in the total amount of plasma protein in the body. Incidentally, it may be recalled that in some cases of nephritis there is a large increase in the blood lipoids. This is not due to any inability of nephritic patients with lipemia to burn fat as efficiently as normal persons do, as actual metabolism measurements by Hiller, Linder, Lundsgaard and Van Slyke⁴ show. They conclude that the accumulation of fat noted in the blood may be due to a disturbance in the mechanism for transferring lipoids from the blood to the tissue depots. The upshot of recent studies of the New York clinicians is that two factors are probably responsible for the changes in the plasma protein concentration in nephritis. They are, first and more important, a disturbance in the mechanism of their production consequent on the nature of the disease, the presence of infection or toxemia, and dietary vagaries, and, second, the loss in the urine of large amounts of protein, particularly albumin. Although low protein concentration and edema frequently occur together, their relationship, we are told, is not a simple one of cause and effect. Van Slyke and his associates think that these factors and the increase in blood lipoids are probably the expression of an underlying metabolic disorder of a fundamental nature. This places nephrosis in a new and somewhat more formidable category of disease.

BLUE SCLEROTICS AND BRITTLE BONES

Modern biology has given a highly scientific formulation to the phenomena of heredity. In many details, the "laws of inheritance" have become firmly established, not as the result of conjecture and traditional beliefs, but rather on the basis of statistical study or more exact experimentation. Heredity not only is responsible for the regular recurrence, in successive generations, of the structural features and physiologic functions that constitute the very essence of life and the fundamental characteristics of the species, it also has been found to account for many of those perplexing variations that disclose unlikeness where similarities might have been expected. Blue eyes instead of brown, red hair instead of darker hues, a small stature amid a family group of large build—such seeming anomalies often serve to indicate latent characteristics that crop out only occasionally, though by no means always "without rhyme or reason," in the sequence of offspring from a common stock. There are periods in inheritance when dominant characteristics give way to recessive traits. This does

¹ Epstein A. A. *Am. J. M. Sc.* 154: 638 (Nov.) 1917, 163: 167 (Feb.) 1922.

² Linder G. C., Lundsgaard C. and Van Slyke D. D. The Concentration of the Plasma Proteins in Nephritis, *J. Exper. Med.* 30: 887 (June) 1924.

³ Linder G. C., Lundsgaard C., Van Slyke D. D. and Stillman F. Changes in the Volume of Plasma and Absolute Amount of Plasma Proteins in Nephritis, *J. Exper. Med.* 39: 921 (June) 1924.

⁴ Hiller, A., Linder G. C., Lundsgaard C. and Van Slyke D. D. Fat Metabolism in Nephritis, *J. Exper. Med.* 39: 931 (June) 1924.

not mean that like fails to beget like, for not all the potent hereditary factors are always apparent before they are brought to light by genetic analysis.

The doubt that has been cast with good cause on the older belief that acquired characters, changes occurring during the lifetime of the individual, can be inherited is at length profoundly modifying the theories of inheritance of disease. Among the long list of maladies that were often described as hereditary in an earlier period, there are scarcely any remaining in which heredity can by any stretch of argument be assumed to play a directive part. It is, of course, true that children are at times born with the "taint" of disease, the latter is, however, the result of direct infection rather than inheritance. Thus it has come about that such expressions as "hereditary syphilis" have been replaced by the correct designation of "congenital syphilis."

Shall we then say that there is no such thing as disease extending 'unto the third and fourth generation'? Yes, perhaps, so far as the stigmas of infectious character are concerned. There are, however, disorders and anomalies—departures from the normal structure and function of the species—that may persist through successive generations of offspring, usually making themselves known in an occasional descendant of a common affected ancestry. Alkaptonuria, cystinuria and pentosuria, for example, represent admitted types of "inborn errors of metabolism," if they may not properly be designated as hereditary diseases. The "inborn" error is usually not complete and consequently, the involved persons frequently, if not usually, survive without serious detriment. Only now and then do the "chemical malformations" betray themselves sometimes because of chance accidents for which the usually tolerable anomalies may become responsible. A remarkable instance appears to be represented by persons in whom blue sclerotics, fragile bones, and oto-sclerosis are present. That such unique coloration of the sclera may be associated with one or the other of the additional symptoms just referred to has been noted in clinical writings on numerous occasions.

An elaborate discussion of the syndrome has recently been published by Stolic of Oxford, England. Out of a family of sixty-six persons belonging to five generations, at least eighteen were affected. The tint of blue in the sclerotics, though present in all this group, varied, the depth of coloration bearing no evident relation to the grade of severity of the other symptoms. In no case were brittle bones or deafness found in the absence of blue sclerotics. The deafness is not present at birth, but for some unknown reason begins to manifest itself in the second or third decade. Reference to the "family tree" shows that the transmission of the features under review is direct from one generation to the next. There is no instance of a generation skipping. It is transmitted through both

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Current Comment

HEAT REGULATION AND WATER LOSS

Heat is a product of metabolism which, under ordinary circumstances, is not allowed to accumulate in the body. The removal of the excess of heat, so that the temperature of the organism may remain within its normal ranges, is facilitated by a variety of processes. Part of it can be lost through conduction and convection, or radiated to the surrounding atmosphere, the rest can be removed only as latent heat of vaporization. For the success of the latter type of heat loss from the body, the perspiration is usually held responsible, along with the traction that is eliminated with the water vapor in the expired air. In this way the respiratory surfaces are concerned with heat elimination. It has not been easy to determine the relative importance of the different modes of heat dissipation, yet heat control is of preeminent significance for the body's well being and for the physical comfort of man. There are species that have no sweat glands and consequently cannot lose heat through the evaporation of sweat. Keeton¹ has maintained rabbits under conditions in which any radiation or conduction was practically excluded, so that other modes of loss became necessary if a rise in body temperature was to be averted. It was shown to be virtually impossible for the animals to develop sufficient ventilation to eliminate all the heat formed through the respiratory surfaces; consequently, it must have disappeared through the peripheral surface in the form of heat lost as latent heat of vaporization. In the rabbit, however, the sweat glands, the water thus involved must be lost by a process of direct vaporization, a conception which contrasts thus with that developed by the sweating mechanism. Keeton argues that this is a form of indirectly separated metabolism, the tissues in which it undergoes vaporization only after death. The demonstration of the possibility of a direct evaporation of sweat from the skin recalls at once the so-called "menstrual heat" in man. By modern investigators this is associated in some way with the activity of the sweat glands. We are thus faced with the possibility of a direct evaporation of sweat independent of the

¹ A Revision of Blue Sclerotics with Brittle Bones. *Quart. J. Med.* 17:274 (April) 1924.

¹ Keeton, K. W. 1924. In Heat Regulation, Am.

It may help to explain the heat regulation in those exceptional persons who have a congenital lack of sweat glands, likewise in infants at an age when the function of perspiration is not fully developed, yet when the peripheral loss of water is considerable. As Keeton views it, man may probably make continuous use of the constantly acting "tissue vaporization," and may depend on the discontinuous method of sweating only when heat accumulates in the body to such an extent as to initiate a rise in body temperature that provokes unusual devices for relief into activity.

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Modern advertising methods are certainly not an unmixed blessing. Practically every philosophical observer of current American life will agree with this dictum. Indeed, the advertisers themselves have begun to see the light, and the fantastic blurbs of the automobile advertisements of a few years ago, for example, are giving way to simple statements of quality and price or requests to submit the goods for inspection. Paraphrasing, it is almost axiomatic that, the more flashy the claims, the more shoddy the material. Advertisers who are endeavoring to reach the modern physician have also begun to realize that they are appealing in the main to scientists who are inclined to be a little skeptical of exaggerations and to busy practitioners who have no patience with overstatement. Skirmishing about the outskirts of scientific medicine, however, and now and then making a vicious foray into the camp, one finds the rear guard of a departed generation. Its weapons in the assault on the physician's pocketbook are the old glaringly colored reproductions of misshapen organs, the charts of spotty and distorted bacteria, the caricature and the snappy saying, and the beseechment to purchase extraordinary office devices for their psychological effect in producing increased profits. The most recent evidence is an invitation on the type of postcard and with the same caricature usually used to announce the impending visit of a traveling salesman. Unfortunately, it is devoted this time to the announcement of a commercial clinic to be held in a western city.

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¹ Stobie W. The Association of Blue Sclerotics with Brittle Bones and Progressive Deafness. *Quart. J. Med.* 17: 274 (April) 1924.

² Keeton R. W. The Peripheral Water Loss in Rabbits as a Factor in Heat Regulation. *Am. J. Physiol.* 69: 307 (July) 1924.

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Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS, EDUCATION, PUBLIC HEALTH ETC.)

ALABAMA

New Health Unit—A full-time health service has been established in Marengo County with Dr Kenneth Holden Sutherland, acting health officer. Dr Sutherland is on the staff of the International Health Board and will be in charge of the work in Marengo County until October 1, when a full-time health officer will be named to succeed him. Marengo is the twenty-fourth county in the state to adopt full-time health service.

Society News—The second annual meeting of the Southeast Division of the Alabama Medical Societies was held at Troy, August 21, under the presidency of Dr James M Watkins, Troy. Among others, Dr Carroll W Allen, professor of clinical surgery, Tulane University of Louisiana School of Medicine, New Orleans, spoke on "Operations on the Anal Canal Under Local Anesthesia," and Dr Richard A Burr, professor of surgery, Vanderbilt University Medical Department, Nashville, Tenn., on "Peptic Ulcer."

ARKANSAS

Measles Closes School—Five rural summer schools in Sharp and Izard Counties have been closed on account of measles.

Hospital News—The board of directors of the Camden Hospital Association has purchased a site for the Camden Hospital. It is expected that construction will start soon.

Personal—It is reported that Dr Morgan Smith, Little Rock, will again become dean of the University of Arkansas Medical Department. Dr Smith resigned from that position last fall. Dr Leonce J Kosminsky, Texarkana, has been elected president of the Arkansas Elks' Association.

CALIFORNIA

Hospital News—A site has been purchased on which it is planned to erect a \$1,250,000 hospital building for the Clara Bartlett Hospital, Los Angeles.

Indian Medicine Man Arrested—Rony Dick Wooten, a medicine man of the Wooten Valley tribe of Digger Indians, was arrested August 14 and placed in Fresno County jail charged with violation of the state medical practice act. It is reported the defendant admitted he had on several occasions done a bit of blood letting at the insistence of members of the tribe. It was the death of three persons following blood letting that led to the investigation and arrest.

FLORIDA

Physician Arrested—Dr Alvin H. Weathers, Jacksonville, was arrested at Macon, Ga., August 14, on a charge of violating the Harrison Narcotic Law; it is reported.

Hospital News—Dr J. Kent Johnston, Tallahassee, has opened a new hospital in Meridian Heights, Tallahassee. A permit has been issued for a \$120,000 building for the Jackson Memorial Hospital, Miami. A \$215,000 building for the Gordon Keller Hospital, Tampa, has been planned. Dr Wesley S. Miller, Palatka, is remodeling a building into a thirty-bed hospital which will open about October 1.

ILLINOIS

Physician Fined—Dr Ira O. Paul, Rockford, was fined \$200 and costs, August 15, on a charge of disorderly conduct preferred by one of his patients. It is reported Dr Paul was assessed a fine of \$200 about a week ago on a similar charge.

State Child Health Council—The state department of health has arranged for a conference at Springfield early in September which will be an organization meeting for the creation of a state council of child health agencies. Every organization which operates on a state-wide scale in the field of maternity and child hygiene has been invited and most of

them have accepted the invitation. The object of the council will be to create a clearing house for all problems in the field of child health service and the first conference is expected to result in the adoption of a constitution and a name for the organization, the election of permanent officers and the appointment of committees.

Medical History of Illinois—Sponsored by the Illinois State Medical Society, there is being prepared "A History of Medical Practice in the State of Illinois," which will be an historical record of 250 years of medical practice in the state beginning with the accounts of physicians who accompanied the explorers in this section, and continuing in sequence to modern times. Since it is the purpose to go to original sources for early historic material, any physician who formerly resided in Illinois or any descendant of a pioneer physician who has in his possession valuable original data such as diaries, photographs or other personal material will confer a great favor by communicating with the Committee on Medical History, Illinois State Medical Society, 6244 North Campbell Avenue, Chicago.

CHICAGO

Hospital News—Dr Frank Deacon has purchased the Jackson Park Hospital, 7531 Stony Island Avenue, for \$225,000. It is reported. Plans are being made for a \$300,000 addition to St. Vincent's Infant and Maternity Hospital, 721 North LaSalle Street.

Chicago Medical Society—At a meeting August 13, of the program committee of the Chicago Medical Society with officials of the branch societies, plans were made for the weekly meetings of the central society for the coming season to include (1) one meeting a month devoted to thirty-minute clinical lectures three an evening, on related subjects given by the best clinical teachers in the city, (2) one meeting a month devoted to a symposium the floor to be open to all members for discussion, (3) one meeting a month devoted to prominent out-of-town speakers and (4) one meeting a month devoted to joint meetings with branches of the society, the branch being given the opportunity of presenting the program.

Advertising Specialist Stabbed by Patient—Henry S. Whitney, MD, who for years has advertised as an alleged specialist, was stabbed by one of his 'patients' on August 21. According to the newspaper reports, Whitney's assailant was a Polish laborer who was suffering from syphilis. Two years ago Whitney is said to have agreed to cure him and to have taken \$150 as an initial fee and since that time to have taken \$200 additional. Finally, with only a few dollars left in his pocket the patient purchased a knife and sought out Whitney. Then following a torrent of accusations, according to newspaper reports, Whitney was stabbed in the neck. Whitney has figured in the Chicago newspapers at various times both in the exposure of quacks and in connection with hearings before the state board on revocations of license. In August 1918 Whitney was cited to appear before the state board of registration to show cause why his license should not be revoked. It was reported at the time that the board suspended sentence in Whitney's case on the assurance that he would cease circulating an advertising booklet. He was still circulating advertising booklets in 1924. During the past few years the English language newspapers of Chicago have been more particular about the class of advertising they carried and Whitney has had to confine his advertising methods to the distribution of booklets written in various foreign languages and to newspapers published by negroes.

INDIANA

Physicians for City Schools—Four additional physicians and fifteen additional nurses have been appointed to the staff of the Indianapolis public schools for nutrition work which it is planned to expand from the twenty classes conducted last year to fifty nutrition classes for the coming school year. The physicians appointed are Drs Robert E. Conway, Cyrus J. Clark, Jr., Ernest M. Haggard and Oliver W. Greer. The work will be supervised by Dr James H. Stygall, assisted by Dr Freeman H. Hibben.

IOWA

Physician Honored—Dr Henry B. Young, Burlington, a former president of the state medical society, was recently honored by a celebration of his fiftieth year as a medical practitioner. There was an afternoon program at the Crystal Lake Club and a banquet in the evening, at which seventy were present.

Dr Howard's Successor Appointed—Dr Fred M Smith, Chicago, has been appointed professor of internal medicine and head of the department of theory and practice of medicine at the State University of Iowa College of Medicine to succeed Dr Campbell P Howard who resigned to accept the professorship of medicine at McGill University Faculty of Medicine, Montreal (THE JOURNAL June 21, p 2057). Dr Smith graduated from Rush Medical College, Chicago, 1914, and did postgraduate work at the University of London. He is on the staff of the Evanston Hospital, Evanston, Ill., the Presbyterian Hospital, Chicago, and an instructor of medicine at Rush Medical College.

KANSAS

Hospital News—Christ Hospital, Topeka, has awarded contracts for a \$500,000 building and improvements in the heating plant and laundry.

Acting Dean Appointed—Dr Harry R Wahl, professor of pathology and bacteriology, University of Kansas Medical School, Rosedale, has been appointed acting dean. Dr Wahl is a graduate of Johns Hopkins University Medical Department, Baltimore, and has been a member of the faculty of the University of Kansas Medical School for five years.

MASSACHUSETTS

Personal—Dr Frederick H Verhoeff, Boston, has been appointed professor of ophthalmic research in the Medical School of Harvard University, and Dr George S Derby, assistant professor of ophthalmology, has been appointed Williams professor to succeed Dr Alexander Quackenboss, retired.

Course in Public Health—The department of biology and public health at the Massachusetts Institute of Technology, Cambridge, will offer the degree of doctor of public health to qualified candidates, beginning with the next college year. The degree will be placed on the same level as the degrees of doctor of philosophy and doctor of science requiring generally at least three years of graduate work for those having the bachelor's degree.

MICHIGAN

City Conducts Medical School—The Detroit College of Medicine and Surgery, Detroit, has the distinction of being the only school of medicine in the United States which is conducted by the board of education of a city. The administration of the college rests entirely with the board of education of the city of Detroit.

Poliomyelitis in Detroit—According to the bulletin of the Wayne County Medical Society, seventeen cases of poliomyelitis were reported in Detroit during the first ten days of August. The board of health has sent out a warning and has asked that all cases or fever that cannot be reasonably explained as due to some other ailment be isolated pending a careful diagnosis.

MINNESOTA

Health Exhibit—The University of Minnesota School of Medicine, Minneapolis, and the Minnesota State Medical Association are cooperating in a health exhibit which will be held in the public health building at the state fair, August 30-September 6. The exhibit will comprise five sections, tuberculosis, cancer, periodic health examinations, child welfare, and preventive measures against smallpox and diphtheria.

Health Clinics—The public health association, the agricultural society and the American Red Cross of Rock County jointly, will erect a building on the county fair grounds which will be used for public health exhibits. It will be completed in time for the fair this fall.—The Winona County Public Health Association will conduct a child welfare clinic at the county fair, the last week in August, and a series of clinics in other parts of the county in the fall.

Expedition to the Hawaiian Islands—There has been organized at the University of Minnesota an expedition to the Hawaiian Islands to survey the marine fauna and flora along the coast, with special reference to the algae and the food of fish. The occasion of the trip is the first Pan-Pacific Food Conservation Conference, following the termination of which the group will remain for the rest of the summer in the Hawaiian Islands. The work will be a cooperative study of the plants and animals inhabiting the waters there, with reference to their relation to the production of human food.

According to *Science* the members of the expedition include Henry A. Erikson, Ph.D., chairman, department of physics, James Arthur Harris, Ph.D., professor of botany, Shirley P. Miller, M.A., instructor of anatomy, Royal W. Chapman and William E. Hoffman of the department of zoology, Ross A. Gortner, Ph.D., professor of plant physiology, William A. Riley, Ph.D., chief of the division of entomology, Josephine Tilden, M.S., professor of botany.

MISSISSIPPI

Personal—Dr Henry S. Gully, Meridian, has been elected superintendent of the Mattie Hersee Hospital to succeed Dr Samuel H. Hairston, resigned.

MISSOURI

Physician Exonerated—Dr John W. Barson, Joplin, who was arrested August 7, on the charge of manslaughter for an alleged criminal operation and released under \$3,000 bond, was exonerated from all charges at a preliminary hearing, August 17.

Personal—Dr John M. Frankenburg, Kansas City, has been appointed superintendent of the Kansas City Hospital to succeed Dr William L. Gist, resigned.—Dr Samuel T. Van Dover, St. Louis, has been appointed chief surgeon of the Terminal Railroad Association to succeed the late Dr William A. McCandless.

Hospital for Pike County—Physicians of Pike County are planning to have the voters at the November election approve a proposition for the erection of a county hospital for which, it is reported, there is a trust fund for maintenance created by the late Otis Smith, who left \$100,000, and the late Miss Barr, who left \$40,000, to be used for the purpose of erecting and maintaining a hospital at Louisiana.

Child Welfare Clinic—The child welfare clinic, conducted by the state board of health at Doniphan, August 6-8, was attended by 121 children, that at Naylor, August 13, by forty children and the clinic at Oxy, August 14, by thirty children. An examination was made in each case, a diet card and a list of physical defects found given each parent as well as advice on the care of the children's teeth and eyes, and literature on the general care of children's health.

MONTANA

Poliomyelitis at Missoula—Eight cases of poliomyelitis with five deaths have been reported within a period of three weeks at Missoula, it is reported.

NEW YORK

Personal—The board of trustees of the State Institute for the Study of Malignant Diseases has appointed Dr. Burton T. Simpson, Buffalo, superintendent to succeed the late Dr. Harvey Gaylord.

Veterans' Hospital Opened—The U. S. Veterans' Bureau Hospital No. 96, Tupper Lake, New York, was formally opened, August 15, making available 500 additional beds for tuberculosis cases. Dr. Edward P. Odendahl is the medical officer in charge.

Illegal Practitioner—James Nardi, New York, pretending to be a physician, convinced a whole family, mother, father, son and daughter that they were ill and treated them for several months, it is reported. He was paid about \$900. Nardi is now being held for trial in special sessions in \$1,000 bail.

Investigating Committee—The Jamestown Medical Society appointed a committee August 19. It is reported, consisting of Drs. Charles E. Goodell, Raymond C. Fess, James F. Valone and Lester D. Bowman, to confer with the board of public welfare regarding an investigation which 'the medical men' requested. The board of public welfare is a municipal board and controls the Jamestown General Hospital.

The Poliomyelitis Outbreak—According to the state department of health, 217 cases of poliomyelitis have been reported from eighty-two foci since June 1 as compared with sixty-seven cases reported from forty-three foci in 1923. Of the cases this year 50 per cent are under 5 years of age, 33 per cent between 5 and 9 years, and 11 per cent between 10 and 14 years. The preponderance of cases has been reported from urban centers—Syracuse and Oswego—but small communities have reported a number of cases among which are the towns New Haven, Oswego County, and De Witt, Onondago County, and the suburban villages of Eastwood and

East Syracuse—Another center seems to be developing in Dunkirk, Chautauqua County, and two cases have been reported at Riverhead, L. I.—The total number of cases in the epidemic at Syracuse had reached eighty, August 12, and there had been seven deaths.

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the expenditure of \$125,000 for improving the Capital, Coldville in addition to which has just been completed. The old building is to be modernized.—The new building is to be a \$300,000 building for the Hospital, Harrisburg.

Prevention of Pneumonia—The city of Pittsburg recently required all cases of pneumonia to be reported. The purpose of this somewhat advanced step, the health authorities announced is (1) to prevent the spread of the disease by direct contact with other persons (2) to inform the public in regard to protection against pneumonia by avoiding contact with cases and by avoiding influenza and (3) to obtain complete statistical data on the incidence of pneumonia and afford an opportunity for study of the environmental factors in relation to the cause of pneumonia. An interesting feature of this campaign is that the public offered practically no opposition to the measures.

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Hospital News—A new sanatorium for the treatment of tuberculous children, constructed at a cost of \$24,000, Graceland was opened July 26.—A site has been selected for the Longview Memorial Hospital at Longview. It will be a three story fireproof building with a capacity of eighty beds and will cost \$140,000, exclusive of equipment.

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CANADA

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Personal—Dr David Fraser Harris, professor of physiology at Dalhousie University Faculty of Medicine Halifax, Nova Scotia, has resigned.—Dr Antoine H Desloges, director of public health of the province of Quebec will represent Canada on the League of Nations Health Committee.—Dr Odilon LeClerc attended the third annual congress of the International Association Against Tuberculosis held at Lausanne and on his return will make a tour of inspection of the antituberculosis dispensaries in Quebec and make recommendations for improvements in their management. The opening of a new series of dispensaries will then be announced.—Dr William T B Mitchell, Ottawa Ont has recently been appointed lecturer on psychiatry at McGill University Montreal, Que. Dr Mitchell was formerly chief psychiatrist in the department of soldiers' civil reestablishment Ottawa, Ont, and clinical director at Westminster Hospital, London, England.—The *Bulletin medical* of Quebec gives the details of the celebration of the fiftieth

professional anniversary of Dr Edwin Turcot of the chair of internal medicine at Laval University Faculty of Medicine Quebec. More than fifty physicians gathered at the reception champagne in his honor at the villa of Dr Marois.

GENERAL

American Legion Convention—American medical officers who served with the British in the World War and who attend the American Legion convention at St Paul will have their headquarters with Dr William A R Chapin of the Massachusetts delegation.

Directory of State and Insular Health Officers—The U S Public Health Reports, August 22 contains a tabulation of state and insular health departments of the United States, the names of officers of the state boards of health and of the various departments and bureaus and data concerning appropriations for these departments and the names of their publications.

Carnegie Institute of Pittsburgh—The Carnegie Corporation New York has paid to Samuel H Church president of the Carnegie Institute of Pittsburgh \$8,000,000 which was provisionally promised four years ago. This makes a total amount of \$38,000,000 given to the institute by the Carnegie Corporation. It is to be added to the endowment for the educational work of the institute.

Provisional Birth Rates—The Department of Commerce announces that provisional birth rates for the first three months of 1924 show lower birth rates than for the corresponding three months of 1923. For the states compared the birth rate for the first quarter of 1924 was 21.3 as compared with 22.7 for the same period in 1923. The highest rate for the quarter is 28.9 for North Carolina and the lowest 13.8 for Montana.

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American Academy of Ophthalmology and Oto-Laryngology—Sir Arthur W Currie LL.D. vice chancellor McGill University will deliver the address of welcome at the twenty-ninth annual meeting of this academy at Montreal September 16-20 the entire ninth floor of the Mount Royal Hotel being reserved for the sessions (*THE JOURNAL*, May 3 p 1452). There will be an exhibition of old and rare books on the eve through the courtesy of Dr William Gordon M Bivers Montreal. There is a list of 120 candidates for fellowship to be presented at the meeting.

Standard Weight of Ice Cream—A few states have adopted laws dealing with the sale of ice cream by weight. Wisconsin requires that the volume of ice cream when melted shall be not less than one half the volume in its frozen state as it is manufactured and sold. Kansas has a law which requires a standard density of ice cream. Experiments to determine a proper standard have been conducted in Washington and the Department of Agriculture proposes a tentative standard weight of 4¾ pounds per gallon subject to discussion and possible change before it is incorporated in the state law.

Change in Cost of Living—According to a survey by the National Industrial Conference Board between March 15 and July 15 1924 there was an average decrease of nine-tenths of 1 per cent in the cost of living. This change was due to decreases in the average cost of food, clothing, fuel and sundries. The only increase was in the average cost of shelter. Between July 1920 when the peak of the rise in the cost of living since 1914 was reached and July 1924 there was a decrease of 20.9 per cent. The increase in the cost of living since July, 1914 was 61.7 per cent. The purchasing value of the dollar based on the cost of living July 1924, as compared with the dollar in July 1914 was 61.8 cents.

Pacific Northwest Medical Association—The third annual meeting of this association at Vancouver, June 26-28 was the first international medical convention ever held in British Columbia and the total registration 589 was larger than at any other meeting. The sessions were held in the ballroom of the Hotel Vancouver, where a large number of the delegates stopped. There was but one official social function at

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GENERAL

American Legion Convention—American medical officers who served with the British in the World War and who attend the American Legion convention at St Paul will have their headquarters with Dr William A R Chapin of the Massachusetts delegation.

Directory of State and Insular Health Officers—The U S Public Health Reports, August 22, contains a tabulation of state and insular health departments of the United States, the names of officers of the state boards of health and of the various departments and bureaus and data concerning appropriations for these departments, and the names of their publications.

Carnegie Institute of Pittsburgh—The Carnegie Corporation New York has paid to Samuel H Church president of the Carnegie Institute of Pittsburgh \$8 000 000, which was provisionally promised four years ago. This makes a total amount of \$38,000 000 given to the institute by the Carnegie Corporation. It is to be added to the endowment for the educational work of the institute.

Provisional Birth Rates—The Department of Commerce announces that provisional birth rates for the first three months of 1924 show lower birth rates than for the corresponding three months of 1923. For the states compared, the birth rate for the first quarter of 1924 was 21.3 as compared with 22.7 for the same period in 1923. The highest rate for the quarter is 28.9 for North Carolina and the lowest, 13.8 for Montana.

Provisional Mortality Figures 1924—The Department of Commerce announces that provisional figures for the first three months of 1924 show lower death rates than for the corresponding periods of 1923. For the states compared, the death rate for the three months was 12.6 in 1924 against 15 for the first three months of 1923. If the ratio of the crude rates to the adjusted rates for 1920 be applied to the 1924 quarterly rates, the highest rate for the first quarter of 1924 is that for Florida 16.6 and the lowest that for Montana, 8.3.

American Academy of Ophthalmology and Oto-Laryngology—Sir Arthur W Currie LL.D vice chancellor, McGill University, will deliver the address of welcome at the twentieth annual meeting of this academy at Montreal September 16-20 the entire ninth floor of the Mount Royal Hotel being reserved for the sessions (THE JOURNAL, May 3 p 1452). There will be an exhibition of old and rare books on the eye through the courtesy of Dr William Gordon M Byers Montreal. There is a list of 120 candidates for fellowship to be presented at the meeting.

Standard Weight of Ice Cream—A few states have adopted laws dealing with the sale of ice cream by weight. Wisconsin requires that the volume of ice cream when melted shall be not less than one half the volume in its frozen state, as it is manufactured and sold. Kansas has a law which requires a standard density of ice cream. Experiments to determine a proper standard have been conducted in Washington and the Department of Agriculture proposes a tentative standard weight of 4.34 pounds per gallon, subject to discussion and possible change before it is incorporated in the state laws.

Change in Cost of Living—According to a survey by the National Industrial Conference Board between March 15 and July 15, 1924 there was an average decrease of nine-tenths of 1 per cent in the cost of living. This change was due to decreases in the average cost of food, clothing, fuel and sundries. The only increase was in the average cost of shelter. Between July, 1920, when the peak of the rise in the cost of living since 1914 was reached and July, 1924, there was a decrease of 20.9 per cent. The increase in the cost of living since July, 1914, was 61.7 per cent. The purchasing value of the dollar based on the cost of living July, 1924 as compared with the dollar in July 1914, was 61.8 cents.

Pacific Northwest Medical Association—The third annual meeting of this association at Vancouver, June 26-28 was the first international medical convention ever held in British Columbia and the total registration 589 was larger than at any other meeting. The sessions were held in the ballroom of the Hotel Vancouver, where a large number of the delegates stopped. There was but one official social function, at

which the retiring president, Dr. Homer D. Dudley, Seattle, gave the presidential address and Dr. Thomas C. Routley, Toronto, presided. In accordance with the by-laws of the association, the speakers at the sessions were from outside the territory of the association, and they included noted authorities from Great Britain, Canada and the United States.

Psychologic Research at Yale University—A generous contribution for five years by the Laura Spelman Rockefeller Memorial provides for psychologic research at Yale University. A group of research specialists will be associated together in an institute for the study of fundamental problems of behavior and for the training of personnel for the pursuit of new studies. Roswell Parker Angier, Ph.D., professor of psychology at Yale, will be chairman of the institute, which will be an integral part of the university and closely associated with the graduate school. Arrangements have been completed for bringing to the institute three prominent scientists, Robert M. Yerkes, Ph.D., formerly of the National Research Council, Raymond Dodge, Ph.D., formerly professor of psychology at Wesleyan University, and Clark Wissler, Ph.D., of the American Museum of Natural History.

Homeless Children—A recent report of the Children's Bureau, U. S. Department of Labor, on "Foster Home Care for Dependent Children," states that one third of the homeless children in the United States under the care of charitable agencies have found foster parents who have taken them into their homes. The emphasis in the last decade on the need of home care for the child has resulted in an effort to prevent the break-up of the child's own home by giving mothers' pensions or public aid to children in their own homes, and, secondly, to find a substitute home for the homeless child. The results of this effort are evident, forty-two states give public aid to dependent children in their own homes, and the number of children in foster homes has increased while the number of children in institutions has, in proportion to the child population, decreased. According to the report, the number of children aided in their own homes is placed at 127,000, the number in foster homes at 70,000, and the number in institutions at 125,000. The report states also that foster home care for children is not a new experiment. This method under various names has been used for centuries.

Third Pan-American Scientific Congress—The members of the Third Pan-American Scientific Congress which meets at Lima, Peru (THE JOURNAL, June 21, p. 2059), will comprise official delegates from countries represented representatives of universities, scientific institutes and societies of American countries, citizens of the countries attending the congress and foreigners residing therein, invited by the organization committee, and authors of papers submitted to the congress. Papers for the congress will be received up to October 1. Authors unable to send their papers in due time must forward the titles thereof to the secretary-general, together with a summary not exceeding 1,500 words, within the period specified. Within three days before the official inauguration, preparatory sessions will be held to elect the honorary president and vice presidents, and the board, and to designate honorary members. When the congress commences work, the president, the secretary-general, and the presidents of the official delegations of the attending states, will form the executive committee, which shall propose the conclusions to be voted by the congress and the city wherein the next congress will meet. The official languages of the congress will be Spanish, Portuguese, French and English.

Instruction in Sanitary Engineering—The following colleges offer full courses in sanitary engineering, according to Mendelsohn, *Public Health Reports* August 15. Columbia University, Harvard University, Massachusetts Institute of Technology, Pennsylvania State College, State University of Iowa, University of California, University of Illinois, University of Michigan, University of Texas and Villanova College. Four other colleges offer optional courses in sanitary engineering. Iowa State College, University of Kansas, University of North Carolina and West Virginia University, and among the other engineering colleges in the country, at least fifty-five give courses in water supply and water works, sewerage and sewage disposal. The number of graduates from sanitary engineering courses in engineering colleges the author states increased steadily until the World War caused a sharp and sudden drop. This year the number will be at least thirty-seven graduates as compared with sixty-nine in 1917. The sanitary engineering course differs from the civil engineering course as now given mainly in that about 6 per cent more time is allotted to sanitary engineer-

ing subjects and 4 per cent more time to chemistry and biology instead of allied engineering subjects. The courses are generally four years in length, although five years in one college and in another six.

Society News—The thirty-fourth annual meeting of the American Electrotherapeutic Association will be held at the Hotel Pennsylvania, New York, September 9-12. Dr. Sinclair Tousey, New York, the president, will deliver an address on "The Principles of Radium Therapy." Physiotherapy clinics will be held at the U. S. Veterans' Bureau, Grand Central Palace, Lexington Avenue and Forty-sixth Street, the Reconstruction Hospital, One Hundredth Street and Central Park West and the Beekman Street Hospital, 117 Beekman Street. All legally licensed physicians are cordially invited. The thirty-second annual meeting of the Association of Military Surgeons of the United States will be held at San Antonio, Texas, November 13-15. The Air Service Medical Association has accepted the invitation to hold a joint meeting. The railroads have agreed to grant a round trip rate not greater than a fare and a half, and probably a lower rate will be granted. The chief of staff of the army has authorized the use of troops on duty in San Antonio and the second medical regiment will give a demonstration similar to that of last year at Carlisle Barracks. There will also be an aerial demonstration which will include among other things the aeroplane ambulance and the physical examination for flyers. Through the courtesy of the state department invitations have been extended to officers of the military service of thirty-three foreign governments.

Suit Brought to Abolish Limit on Liquor Prescriptions—A suit has been brought in the supreme court of the District of Columbia to abolish the restrictions on the number of liquor prescriptions which a physician may issue to his patients under the Volstead Law. The action is initiated by Dr. William C. Philes, Washington, D. C., and asks for an injunction to prevent Roy A. Haynes, prohibition commissioner, and H. M. Luckett, district prohibition agent, from limiting the number of prescriptions which Dr. Philes may issue. The complainant alleges that the Volstead Law does not purport to regulate the use of lawfully possessed spirituous liquors for medicinal purposes otherwise than under the physicians' prescriptions nor to regulate the giving of advice in regard to such use. The complainant challenges the right of the prohibition commissioner to restrict the number of patients a physician may treat and questions the authority which limits liquor prescriptions to 100 pint prescriptions to each physician each ninety days.

By refusing to issue prescriptions in excess of that number Dr. Philes, through his attorneys T. Morris Wampler and Purcell and Densmore, contends that the defendants are depriving him of his property without due process of law, depriving him of his right to practice his profession and thus deprive him of the means of earning a livelihood. The complaint further states that based upon his experience, observation and study of medical science the complainant believes that the use as medicine of spirituous liquors to be taken internally is, in certain cases, necessary for the proper treatment of patients.

The physician then states that he has more than ninety cases each three months which, in his opinion, require liquor in their treatment. To deprive him of the right to prescribe this treatment is an unwarranted interference and "deprives him of his right to practice medicine although duly licensed and admitted to practice in the District of Columbia." Dr. Philes alleges that he has never prescribed liquor as a beverage but adds, conceding it to be his duty, intends unless restrained by lawful means to issue prescriptions in such cases, according to his best skill and judgment.

LATIN AMERICA

Standardization of Biologic Tests—The public health authorities in Argentina have appointed a committee to study ways and means for standardization of the Wassermann and other biologic tests in laboratories throughout the country.

Brazilian Congress on Hygiene—Dr. Mario Pinotti, Caixa Postal 2654, Rio de Janeiro, is in charge of all correspondence for the approaching second Brazilian Congresso de Higiene to meet at Bello Horizonte. Among the fifteen officially designated topics to be discussed are "Cancer in Brazil," "Standardization of Statistics," "Occupational Hygiene," and "Mental Hygiene."

Fifth Biology Reunion in Mexico—This meeting convened at the medical school in the City of Mexico, July 21, and continued for several days. Dr. Fernando Ocaranza, presi-

dent of the Sociedad Mexicana de Biología, opened the proceedings and spoke later on "Poisoning from Scorpion Stings" and "Mexican Publications on Physiology." Prof. I. Ochoterena discussed neurologic questions, especially "The Dual Innervation of Striped Muscles," and Dr. I. González Guzmán the "Technic of Postmortem Staining" and the "Differential Blood Count." Among the other speakers Dr. F. G. Perrin described cancer of endocrine organs and Drs. Cervantes and Varela their experiences with testis implants.

Personal—On concluding his series of lectures on the heart, at the invitation of the Buenos Aires medical faculty, Prof. H. Vaquez, Paris, was tendered a banquet by the dean of the medical school, Prof. J. Irribarne. The dean of the medical faculty of Montevideo, Dr. M. Quintela, and of the La Plata medical faculty, Professor Dasso, were also guests of honor.—Dr. J. M. Obarrío has resigned the charge of the Instituto Preparatorio at Buenos Aires.—Prof. Jose Arce, rector of the University of Buenos Aires, presided at the banquet tendered recently to Prof. Nerio Rojas on his appointment to the chair of legal medicine.—Dr. Kohly, Ruiz, manager of the *Revista Médica Cubana* has returned to Havana after a year spent in visiting dermatologic clinics in other countries under commission from the public health service of which he is an official.

FOREIGN

International Esperanto Congress—The *Wiener Illustrierte Wochenschrift* states that forty physicians from nine different countries registered for the Sixteenth Esperanto World Congress which opened at Vienna, August 8. Four addresses were announced in the medical section.

Status of Plague in Egypt—From January 1 to June 17, 1924, a total of 269 cases of plague was reported in Egypt and fourteen cases during the week ended June 17 in seven districts in Egypt. The total number of cases reported last year from January 1 to June 17 was 1036.

Lister Medal—The Royal College of Surgeons of England has awarded its Lister medal for distinguished contributions to surgery to Sir William Watson Cheyne, who, in accordance with the conditions of the trust, has undertaken to give an address at the Royal College of Surgeons next year.

Sterilization of the Unfit—The ministers of justice and of foreign affairs of Saxony have recommended to the German national department of justice that physicians operating for sterilization of the unfit should be exempted from the laws penalizing infliction of personal injury on a second party. The complete text of the proposed bill is given in the *Deutsche medizinische Wochenschrift*, July 25.

Prize for Research on Altitude—The mountain resort Semmering offers a prize of 1000 crowns for the best published or unpublished work of the last two years on the physiology and pathology of altitude. A committee of five has been appointed in the Vienna Academy of Sciences to award the prize. Only Austrians can compete unless the research work is done at an Austrian institute or mountain resort.

British Medical Association's Prize Winners—At the annual general meeting of the British Medical Association, at Bradford, Dr. Edward Mellanby, professor of pharmacology at the University of Sheffield, was awarded the Stewart prize, consisting of an illuminated certificate and a check for £30 for discoveries on the relation between rickets and the deficient diets. Dr. Henry Britten Brackenbury was presented the association's gold medal and illuminated address for distinguished services to the association and the medical profession.

Children in Motion Picture Halls—The Académie de médecine at Paris recently adopted a resolution protesting against allowing children under 5 years of age to be taken into theaters and motion picture halls as the large number of people and the defective ventilation can be only harmful for very young children. The vote was taken to endorse a similar resolution by the Bouches-du-Rhône Medical Society. The latter society urged further that children under 12 should be excluded from certain representations but the Académie rejected this as too vague.

St Thomas Hospital—Fifty beds at the St Thomas Hospital, London, have been closed for lack of means. Prior to the war, St Thomas Hospital was able to pay its way, but the five years in which it not only carried on its own program with 484 beds, but in addition provided 530 beds for the treatment of soldiers ended in its being saddled with its present

debt of £120,000. The war office contributed toward the cost of its public military service but there was an unavoidable excess of expenditure over income, and it has not been possible to bring the hospital back to its prewar condition.

Imperial Cancer Research Fund—The annual meeting of the Imperial Cancer Research Fund was held, July 23, at the Examination Hall, Queen's Square, London, the Duke of Bedford presiding. During the last year the activities of the fund increased and still greater activity is practically assured in view of the approaching completion of the Stroud Laboratory, which has been provided free of cost to the fund by the executors of the late Augustus C. Stroud. There was a substantial increase during the year in subscriptions and donations including a grant of £500 from the Worshipful Company of Goldsmiths.

Metric System in Japan—A recent imperial ordinance announced that on July 1 the metric system became the official standard of measurement in Japan. The law does not contemplate the immediate universal use of metric units although the government for some time has been conducting an education campaign to popularize the system and has made demonstrations in various cities. As an example of the financial difficulties to overcome in addition to very formidable physical difficulties, it is said that the replacement of the scales used at present by the imperial government railways will mean the purchase of several thousand new scales at an expenditure of perhaps a million yen.

The Ponndorf Method on Trial—The public health authorities in the Netherlands have appointed a committee of physicians, including Drs. Aldershoff, H. Brouwer and G. Scheltema in addition to public health officials, to investigate Ponndorf's scarification method of tuberculin treatment. The committee decided that a deputation of three of its members should be sent to Weimar to study Ponndorf's technic and investigate the outcome where it has been applied in various hospitals in Germany. Ponndorf regards the skin as a potent element in the production of antibodies and seeks to utilize this to the utmost.

Royal Sanitary Institute—At the thirty-fifth annual congress of the Royal Sanitary Institute, Liverpool, which opened July 14, Professor Kenwood gave a popular lecture on modern civilization from the health point of view in which he insisted on the important rule "to live as healthily as possible we must live as naturally as possible." He said that civilized communities were tending toward an artificiality of living which threatened health in many ways that man had an abundance of food, the bulk of which was not fresh and was impregnated with chemical preservatives, that bread could scarcely now be called the staff of life as the most valuable parts of the flour do not enter into it. The visit of the king and queen took place July 19 in connection with the consecration of the completed portion of the cathedral.

Chair of Surgery at Edinburgh—The chair of surgery at the University of Edinburgh, vacant through the death of Prof. Alexis Thomson, has been reorganized on a whole-time basis with permission granted to the professor to do private practice two afternoons a week in the city of Edinburgh. Mr. John Fraser, to whom the chair was first offered, declined it on account of the conditions attached and the curators have now appointed Mr. David P. D. Wilkie for a period of ten years from October 1. Dr. Wilkie, who is 41 years of age, has made numerous contributions to surgical literature and in 1918 received the Victoria Jubilee Liston prize, awarded every three years at the Royal College of Surgeons of Edinburgh for original research. He has been joint lecturer in surgery for several years in the extramural school at Edinburgh.

Personal—Dr. Wacław E. Majewski, public health officer of Cheln, Poland, Dr. Germond Wigim, University of Upsala, Sweden, and Dr. Nils Hertman, Christiania, Norway, are in this country studying health demonstration and public health methods.—A party of Spanish physicians has been making a clinic tour of England and Drs. Rosell and San Ricart y Pla Armengol of Barcelona spoke at the annual meeting of the British Medical Association which the party attended.—The Italian Society of Dermatology and Syphilography has elected to honorary membership Dr. B. Barker Beeson of Chicago and Profs. R. Riecke, Göttingen, E. Hoffmann, Bonn, and F. Juliusberg, Brunswick.—The Vienna Dermatologic Society has recently elected ten foreign honorary members including Profs. J. A. Fordyce, New York, Fibiger and Rasch, Copenhagen, Herxheimer, Frankfurt, and J. Almqvist, Stockholm.

Medical Congresses at Milan in October—Five medical meetings are planned to dovetail into each other at Milan the last week in October. The annual meeting of the Italian Pediatrics Society convenes October 22, with three topics selected for discussion, including "The Diathesis and Constitution in Children." The orthopedics congress follows, with only one topic inscribed on the bulletin, "Scoliosis." The congress on surgery follows with the topics of "Sympathectomy" and "Indications for Splenectomy." The urology congress which opens October 29, will discuss "Diverticula of the Bladder" and "Electrocoagulation of Bladder Tumors." The congress on internal medicine closes the list, October 28-31. Pende and Piazza will introduce the discussion on "Suprarenal Syndromes," L. Ferrarini, "Diagnosis of Nephritis" and in a joint meeting with the Società di chirurgia Micheli and Cappelli will discuss "Indications for Operation in Various Forms of Splenomegaly."

Deaths in Other Countries

Dr K. G. F. Lennmalm, rector of the Karolinska Medico-Surgical Institute at Stockholm, professor of neurology, member of the committee for the awarding of the Nobel prize in medicine, and honorary member of the Swedish Medical Association and other societies elsewhere.—Dr A. M. Luzzatto, professor of pathology and clinical medicine at the University of Ferrara, author of numerous articles including his monograph on cystic kidneys, aged 50.—Dr G. Richelot, professor emeritus of surgery at the University of Paris, president of the Académie de médecine in 1921, a prolific writer on surgery and gynecology and also in general literature under the pseudonym of Syma, aged 80.—Dr Maximo Crescentino, dean of the medical profession at Caracas, one of the founders of the Caracas Medical Society.

CORRECTION

Appointments at Vanderbilt—Under this head THE JOURNAL, August 16, p. 540 stated that Dr. James M. Mill had been appointed professor of bacteriology. The name should have been Dr. James M. Neill, and the appointment, associate professor of bacteriology.

Government Services

Hospitals Authorized

Pursuant to instructions of the Secretary of War, June 27, 1922, the organization of general hospitals, organized reserves, No. 88 (The Columbia Hospital of Richland County, Columbia, S. C.), No. 138 (Stanford University Medical School, San Francisco, Calif.), No. 140 (Los Angeles General Hospital Unit, Los Angeles), No. 34 (The Elizabeth General Hospital and Dispensary, Elizabeth, N. J.), surgical hospitals No. 3 (Atlantic City Hospital Unit, Atlantic City, N. J.), No. 67 (Los Angeles General Hospital Unit, Los Angeles), evacuation hospitals No. 81 (Los Angeles Hospital Unit, Los Angeles) and No. 6 (Rhode Island Hospital Unit, Providence, R. I.), have been authorized.

Promotions and Appointments in U. S. Public Health Service

The following physicians have been promoted to the grade of surgeon, U. S. Public Health Service: Clifford R. Eskey, Walter T. Harrison, Charles Armstrong, Rolla E. Dyer, and Justin K. Fuller. The following have been appointed and commissioned in the grade of assistant surgeon: Ernest E. Huber, Howard M. Walker, and Henry F. Lucking.

The Defense Test

The National Committee for Co-Operation of Veteran and Patriotic Societies to Support the U. S. Government's Plans for the Defense Test, September 12, defines the Defense Test as follows: (1) A physical demonstration of the new army of the United States as it exists at the present time. (2) A test of the plans already made by the War Department for expanding to full strength our skeleton army created by the National Defense Act which was passed by Congress in 1920. (The Regular Army, National Guard and Organized Reserve are all skeleton organizations in peace time.) (3) An oppor-

tunity for well informed speakers to explain to the public what the National Defense policy of the United States is—in other words, to tell how Congress planned to provide for our country's protection when they passed the National Defense Act, and further, to tell the people of each community what they will be called on to contribute as a community in men, services, and material to do their part in defending their country in so far as this can be foreseen at this time. (4) An opportunity for patriotic citizens and patriotic societies to show their support of the plans of the United States government, to protect and defend the people of the United States whenever the need for such protection and defense arises. These plans now being put to the first test were prepared by the War Department in carrying out the instructions given by Congress in the National Defense Act.

Army Appointments and Resignations

Drs. Hubert M. Nicholson, Edward J. Kallus, Arthur D. Hawkins, Howland A. Gibson, formerly first lieutenants, M. O. R. C., on duty at Carlisle Barracks have been commissioned first lieutenants in the regular army medical corps. Capt. Harry G. Johnson, M. C. resigned, effective, July 29.

Foreign Letters

PARIS

(From Our Regular Correspondent)

Aug. 1, 1924

The Practitioner in Relation to Public Health

A new journal, the *Mouvement sanitaire*, referred to Dr. E. Roux, director of the Pasteur Institute, the question as to what constitutes the function of a medical hygienist. Dr. Roux discusses the reasons why in France it is difficult to secure the introduction and enforcement of hygienic measures. The principal reason lies in the individualism of the French, who are loath to yield to hygienic discipline for the sake of the common welfare (THE JOURNAL, Feb. 26, 1921, p. 601). It would seem as if the real teachers of public health principles would be the physicians. They have entrance to the family fireside and are acquainted with the individual members of the family. They see what conditions prevail in the homes, and they are in a better position than any one else to give advice with respect to hygienic management. Their duty does not stop with the care of patients, but should be concerned as including the preservation of the entourage. It would seem that, through the physicians, a knowledge of hygiene ought to be rapidly disseminated among the people. Why, then, is hygiene in France, in spite of the widespread influence of the physicians, so backward? It is because the present conditions of society compel physicians to practice their profession in such a manner that it is not easy for them to fulfil the role of hygienist which seems naturally to fall to their lot. In the large cities, the leading authorities in medicine are consultants who are not called to the homes except in grave cases. The local practitioners are obliged to make many calls every day, to climb many stairs, and after having examined the patient and prescribed the treatment they are compelled to reduce to a minimum the advice needed with respect to prophylaxis. They have not time to explain how soiled linen should be treated before it is turned over to the laundress, or how a sputum cup should be disinfected. And when they do take time to give some hasty instructions the chances are that they will not be understood. As for the rural practitioner, he has even less time than the city physician to give his clients instructions with regard to the prophylaxis of disease and the application of the principles of hygiene. Thus, physicians do not play in the dissemination of a knowledge of public health just the

role that they might be expected to take on themselves. To these reasons Dr Roux had the courage to add another, which he developed without circumlocution. "The young physician, just after his graduation, is not prepared to function as a hygienist. Indeed up to the present time, instruction in hygiene in the schools of medicine has been chiefly verbal." Rapid field trips to a dispensary, a sanatorium, a disinfection plant, to the intakes of the water supply to the sewers, to the sewage fields and to the filtration plant make up the usual round of practical training that the candidate for graduation receives, and even that is not possible unless the city in which he is pursuing his studies possesses the hygienic utilities just cited. Again, the hygiene of each aggregation is all too often treated as a distinct unit as if the health of the garrison, the school and the factory bore no relation to the health of the city or as if the health of the city did not react on the school and the garrison. Unity of control, which is just as necessary in combating disease as it is in resisting a public enemy, is still an unknown quantity in our public health services, and that is another reason why they secure only mediocre results. Uniform control and management should be the aim in our hygienic services. It is, to be sure, only natural that the minister of public instruction should feel his individual responsibility with reference to the health of the pupils of the land, but Roux only wishes that he might be persuaded to act in accord with his colleague of the public health service. The medical health officer, the agent of the minister of public health, should, in every circumscribed unit, coordinate the efforts of all those who are engaged in the promotion of the public health. Sanitary legislation in France can hardly be said to be fully rounded out as yet. However inadequate though it may appear it is probably equal to that of most foreign countries. If it has not produced the results expected by its promoters the fault lies less in the law than in the manner in which it has been applied. Our hygienic services are too bureaucratic. The worst enemy with which public health administration has to contend is, according to Roux, the bureaucratic hygienist who, without ever paying a visit to the region he serves, endeavors to provide for everything and to regulate everything through instruction sheets and circulars of information. Public health cannot be regulated from a distance, direct contact with the people living in the region to be elevated is a necessity.

The Monument to Pasteur to Be Erected in Chicago

A correspondent of the *Temps* announces that a committee has been formed at Chicago, with Dr Frank Billings as chairman charged with the collection of funds for the erection of a monument to Pasteur. The monument will be executed by a French sculptor M. Leon Hermant who has long been established in the United States. It will be constructed of stone or bronze at a cost of \$30,000. The *Temps* makes an appeal to French physicians for contributions for the erection of this monument.

Responsibility of Surgeons

The courts do not ordinarily claim the right to inquire into questions of a scientific nature but, in spite of this general principle, they do, at times examine into a charge of a tort brought against a physician or a surgeon, and, in case the charge is found to be well grounded, they award the plaintiff damages as compensation for the injuries suffered. A demobilized soldier had been wounded, during the war by shell fragments which had caused the fracture of the right femur in the middle third. He was obliged to submit to an operation on the leg by reason of an osseous metatarsophalangeal ankylosis of the great toe, which prevented him from setting his foot down flat. A double operation was performed (1) astragalectomy with removal by the chisel of

the astragalus which was completely consolidated with the neighboring bones, and (2) cuneiform resection of the metatarsophalangeal articulation of the great toe. During the operation bleeding was abundant so that the surgeon was obliged to leave a tampon in the wound and the wound was closed and wicks inserted. Five days later, the surgeon took off the dressing, in order to remove the threads and apply a plaster cast. The wound had closed, and the surgeon thought the wicks had been removed by the intern. Some time afterward a fistula developed in the instep. The patient was taken to a hospital, where, after surgical intervention, two gauze tampons were recovered through the incision. It was evident that the infection was due to the presence of these foreign bodies. When the patient had recovered, he brought suit against the surgeon for damages. The experts who were summoned for the trial were asked to decide whether the surgeon had operated in accordance with the rules of the art or whether he was guilty of a professional tort. They declared that the mere fact of his having left tampons in the wound did not constitute a professional tort. But the tribunal did not abide by their decision. In his decree, the judge began it is true, by saying that scientific questions subject to debate among physicians cannot be considered the basis for claims for damages and lie without the domain and the investigation of the courts. But, the judge explained this rule did not apply when the fact charged is the result of a characteristic oversight, imprudence, grave neglect, or ignorance of matters that a man trained in the surgical art must necessarily know. The court added "It would be unjust and dangerous for society in general to proclaim as an absolute principle that in no case are physicians and surgeons responsible for the manner in which they practice their art." As a consequence, the surgeon was compelled to pay his patient the sum of 10,000 francs by way of damages.

Thus in spite of the opinion of the experts that there was no evidence of a professional tort in this case, the court held that the operation had been performed under conditions that permitted it to judge whether there was a tort or not aside from any technical question to be entered into.

The Right of Response

According to French law pertaining to the press, the manager of any publication appearing periodically is obliged to insert in its columns the response of any person named or designated in that publication. This "right of response" has often given rise to unjustified pretensions and to actual abuse. In a recent case in which the *Revue des deux mondes* figured the court of appeals of Paris saw fit to limit the application of this law. The response being an act of defense, presupposes necessarily an attack. Criticism of a literary work cannot be regarded as an attack and a review may refuse to insert the response to a criticism. But the case was carried to the supreme court which has just declared that the right of response is absolute and that it can be exercised even though the response was elicited irrespective of any personal attack by criticism of a literary work. What the supreme court has proclaimed with reference to a literary work will doubtless apply with equal force to a scientific work. When a person is named or designated in a review article, he has the right to reply even though the criticism was moderate and made with all impartiality.

A Sanatorium for Students

The National Federation of Students' Associations of France is planning to establish a sanatorium for students, to be erected at Saint-Hilaire du-Touvet, near Grenoble in the plateau region of Petites-Roches which has an elevation of 1,100 meters. The sanatorium of the students will be located therefore, not far from the Interdepartmental Sanatorium

(450 beds), in the Association administration be entrusted to a sanatoriums. He of the students by a committee of the sanatorium will p that they need in studies

Insulin

In the current n *Bordeaux* Dr J La subject of insulin in He has been studying tion of purified insulin technic of Banting and the action of unpurified esterin, etc. It appears insulin, when administered delay markedly the success the coagulation of the blood recently a case in which impure insulin and operated the course of the operation neck. La Barre emphasizes only pure brands of insulin undergo a surgical operation

HOLL

(From Our Regular

The Seventy-Fifth Anniversary Medical Association

The Nederlandsch Maatschappij Geneeskunst convened recently in celebration of the seventy-fifth anniversary the presidential address, which with feeling, Dr Burger gave reminiscence the society was founded and drew a medical life of 1830 and that of today.

Dr Daels of the University of Ghent from the Flemish physicians of Belgium raised whether the society should supply at graduation with information concerning which to practice. Up to the present, no one to establish a clearing-house of information vacant posts for physicians throughout the country has a plethora of physicians—more than the total number in the country. Many expressed the view that it was the duty to secure and to transmit to young physicians newly graduated all the necessary information to possible professional openings in various proposals, however, did not meet with the approval of the members, for many practitioners felt that it leave every physician full liberty to work out his own solution. The assembly decided to collect exact statistics on the matter and, as the first move in this direction, to order the preparation of a comparative table of the percentage of physicians to the total population in different sections of the country.

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BERLIN

(From Our Correspondent)

July 26, 1924

Reform in the Medical Curriculum and in Examination Requirements

Looking toward a reform in examination requirements, to detail in previous letters, Final action in the federal ministry of the requirements have been seem to be commensurate and energy consumed by the publications of physicians in the form of monographs together with the subject. The consideration given to any neglect or lack of problems involved but which affects very the present time Germany to form owing to mis- Anything the lengthening of study now that any attempt the question considered at the working part being there- require accomplish was formerly and changes in the form of the essential curriculum- considered a serious administrative give a increased dates the the and th was end and the study of

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School of Midwifery

At the time of the visit of the medical hygienists who were sent by the health committee of the League of Nations Dr Meuleman made a comparative study of the instruction given to midwives in the principal countries of western Europe. Whereas England, Germany and Austria require an attendance on courses of from six to nine months, at the most, which the author regards as by no means sufficient, Belgium and France have organized a school with a two years course and in the Netherlands the complete course in midwifery comprises three years of study. The first year's instruction covers the theoretical courses in anatomy, physiology and obstetrics. During the second year the pupils assist at confinements and receive instruction in obstetric pathology and in the rearing and training of children. Toward the end of the second year they begin to take independent charge of obstetric cases. The third year is a year for the practical demonstration of their ability and capacities.

The Relation of Supervising Physicians to Attending Physicians

After many long discussions in the industrial medical societies on the subject of the medical control of accident and health insurance certain rules have been adopted as determining the relations between supervising physicians and attending physicians. The attending physician will hold himself ready to give to the supervising physician all the information that he can give him consistent with the right of privileged communication. The date when the insured shall resume work should be decided preferably by the supervising physician but the latter must refrain from giving any suggestion as to treatment even though the patient should request him to do so. Any opinion, suggestion or observation of a therapeutic nature or otherwise, or any controversy as affecting the two physicians must not be discussed in the presence of the patient or his family and any letter dealing with any such question must be sealed. The attending physician will refrain from giving the patient any kind of a certificate or attestation if he knows that the patient is in communication with a supervising physician.

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BELGIUM

(From Our Regular Correspondent)

July 29 1924

The Medical Convention at Brussels— The Opening Session

The fourth session of the Brussels medical convention (*Journées Médicales*)—which has become a regular institution and the most important medical event occurring in Belgium—scored a remarkable success even greater than last year. More than 1500 were enrolled among whom a great many foreign guests were observable more particularly at the opening address which was presided over by M Poulet minister of health. France, Japan, Switzerland, Luxemburg, Morocco, Canada and Roumania sent official delegates, each of whom delivered an address which was warmly applauded. M Parisot the Canadian delegate who referred to the nucleus of Latin culture in French Canada received an especially hearty welcome. The opening session closed with an excellent lecture by Dr Alexis Carrel on "Les trephones cellulaires et leurs fonctions." In connection with his researches on the artificial culture of cells, he pointed out that in order to obtain serums that would persist for a long period of time, other nutrients are needed than those contained in the blood serum for the cells, special materials are required—the cellular trephones—that is, substances produced by other cells.

This year as in previous years the organization of the convention provided for a theoretical and for a practical side. It is impossible in this brief resume to review the countless communications that were presented during the convention not only in the large auditoriums where the crowds of physicians were gathered but also in the various services of the hospital and clinics of the capital where every participant could find according to his taste and his specialty courses of instruction boiled down to a few hours of common study. I will confine myself therefore to a summary of the principal communications that my attendance at the convention allowed me to estimate.

THE PATHOGENESIS OF CHOLERA

In a comprehensive and interesting study Dr Cantacuzene set forth the present-day conceptions of cholera. Cholera is an intoxication—often an acute intoxication. Every choleraic infection develops in the mucosa of the small intestine. It seems that infection occurs through the mouth, the tonsils by the parenteral route or the intestine and that it is in the mucosa of the intestine that vibriolysis takes place, which alone causes intoxication. This phenomenon does not occur if the intestine is in a normal condition. On the other hand if the intestine has undergone certain changes, there is a cyclic struggle in the mucous membrane: first, vibriolysis, then establishment of a lysoresistant strain, next, sensitization of this strain then again vibriolysis on an ever-increasing scale. The experiments performed in the laboratory of Dr Cantacuzene showed that filtered extracts of the intestine have no action on the laboratory vibrio strains. They exert however an influence on vibrio strains derived from the organism.

An interesting point to note was an explanation given by the author for the cessation of an epidemic of cholera. Successive multiple passages cause the vibrio strains to become absolutely lysoresistant. The organism being no longer able to bring about lysis of the vibrio there is no longer any choleraic intoxication. There are only bacteria carriers.

EPIDEMIC (LETHARGIC) ENCEPHALITIS

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(450 beds), in southeastern France, and the sanatorium of the Association of Metallurgists and Miners (300 beds). The administration and management of the new sanatorium will be entrusted to a body that will control the affairs of all three sanatoriums. However, in case of necessity the sanatorium of the students may be administered and managed temporarily by a committee composed of members of the federation. The sanatorium will provide for tuberculous students the care that they need in order that they may later continue their studies.

Insulin and Coagulation of the Blood

In the current number of the *Journal de médecine de Bordeaux*, Dr J. La Barre has an interesting article on the subject of insulin in relation to the coagulation of the blood. He has been studying on animals the effect on blood coagulation of purified insulin prepared in accordance with the technique of Banting and his collaborators, as compared with the action of unpurified insulin, which contains cholin, cholesterol, etc. It appears from his researches that impure insulin, when administered in comparatively small doses, may delay markedly the succession of phenomena that regulate the coagulation of the blood. Vermueue of Ghent reported recently a case in which a diabetic patient, treated with impure insulin and operated on for parotitis, presented during the course of the operation, an abundant hemorrhage of the neck. La Barre emphasizes therefore the necessity of using only pure brands of insulin for diabetic patients who are to undergo a surgical operation.

HOLLAND

(From Our Regular Correspondent)

Aug. 6, 1924

The Seventy-Fifth Anniversary of the Netherlands Medical Association

The *Nederlandsch Maatschappij tot Bevordering der Geneeskunst* convened recently in a special assembly in celebration of the seventy-fifth anniversary of its foundation. In the presidential address which was full of wit and good feeling, Dr Burger gave reminiscences of the epoch in which the society was founded, and drew comparisons between the medical life of 1830 and that of today.

Dr Daels of the University of Ghent brought greetings from the Flemish physicians of Belgium. The question was raised whether the society should supply the young physician at graduation with information concerning favorable fields in which to practice. Up to the present, no effort has been made to establish a clearing-house of information in regard to vacant posts for physicians throughout the country. Amsterdam has a plethora of physicians—more than one sixth of the total number in the country. Many of the speakers expressed the view that it was the duty of the society to secure and to transmit to young physicians who have been newly graduated all the necessary information with reference to possible professional openings in various regions. The proposal, however, did not meet with the approval of all the members, for many practitioners felt that it was better to leave every physician full liberty to work out his own salvation. The assembly decided to collect exact statistics pertaining to the matter and as the first move in this direction, to order the preparation of a comparative table showing the percentage of physicians to the total population in the various sections of the country.

The most important scientific address was that of Professor Wenckebach of Vienna who outlined the development of our knowledge of the diseases of the heart and the blood vessels.

Ocular Lesions and Traumatic Cataract

In connection with his study of a case of traumatic cataract, the etiology of which seemed obscure, Dr Bracy, medical

controller of the *Rijksverzekeringsbank* of Amsterdam, instituted an exhaustive inquiry on the various ocular traumas that the person had undergone. This inquiry included a series of accidents observed during a period of five years from 1914 to 1918. The number of ocular accidents amounted to 14.2 per cent of the total number of accidents, or to be exact, 55,326 out of 389,795. Of the ocular accidents, 73.2 per cent are recorded as due to foreign bodies of the conjunctiva or the cornea, without grave symptoms, and yet 2041 of these accidents resulted in a considerable degree of disability. From the statistics of a life insurance company, the author was able to discover 190 cases of opacity of the crystalline lens which brings up to 0.34 per cent the number of cataracts that are associated with ocular injuries in general.

In studying the etiology of these 190 cases, the author found evidence of direct causation through corneal or crystalline traumatism in 185 cases. In five cases, he could discover only a contusion of the eyeball, in which one could eliminate any direct lesion of the organs considered. In these cases, the diminution of visual acuity began from six weeks to six months after the accident. The author, therefore, regards it as possible for a traumatic cataract to develop without a direct lesion. The mechanism would be a lesion of the crystalline epithelium, which would permit the aqueous infiltration of the organ.

Criminality and Criminals

At the annual convention of medicolegal experts Dr Postma presented a communication on the mentality of criminals and on the practical questions that the problem raises. He divided the criminals first into several categories according to the state of their moral and physical health. He put the incorrigibles in one class and those who were amenable to improvement in another class. The present system of prisons with cells should be entirely abandoned, for human beings cannot remain mentally healthy unless they have the opportunity of enjoying the society of their fellow men. In the treatment and management of imbeciles and moral weaklings during their earlier years, the chief emphasis should be laid on the avoidance of crime. The present penal code holds too closely to the criminal fact and considers too little the individual criminal. In the preparation of a new penal code the collaboration of a psychiatrist and a psychologist is needed. The psychological study should, of course, retain a purely medical basis.

The Management of Tuberculous Patients After Dismissal from the Sanatorium

Dr Bronkhoff and M. Serrarens have just published an interesting monograph concerning the evolution of ideas with respect to protracted courses of treatment in antituberculosis sanatoriums, on the results of such treatment and on the future management of patients after leaving such sanatoriums. From a comparative inquiry instituted in the different countries it became evident that sanatorium treatment, if it is to be efficacious, must be confined to cases in which bacillosis has been demonstrated. But even when a careful selection of patients to be treated has been made, it should be remembered that, after a stay of six months or more in a sanatorium, a patient who has been allowed again to take up a normal existence remains, in spite of everything, a partial invalid who is unable to cope satisfactorily with the difficulties that arise in the struggle for existence. It is with a view to making more efficacious and more permanent the results accomplished by the sanatorium that the after-treatment should be organized.

The reason why the lasting results are not more satisfactory in the case of patients who have been discharged from sanatoriums is that, after their dismissal, the majority do not remain under medical control, and in nearly every case

lead a life that is not subject to sanitary discipline. After-care should be extended not only in the medical sense but also from the social standpoint. At the present time, medical care is partly assured by the dispensaries and by the home visits of visiting nurses, who thus keep up, in a measure, the supervision of the patient. But from the social standpoint the question is much more complex. If a tuberculous person is compelled to struggle for the means of subsistence he is frankly handicapped in his endeavor to attain a complete recovery. The authors do not believe that agricultural work is indicated in the case of all who leave the sanatorium. For many, such work is too hard, and then again, they are too much exposed to inclement weather. According to their view, it would be much better to organize colonies in which many different trades would be represented, so that a real village would be established. All the inhabitants of the village would be subject to constant medical supervision, and the management of the enterprise would keep in close touch with the tuberculosis sanatoriums. In order to make a notable success of the undertaking, it would be advisable to create a regional commission in every large center where there are numbers of patients who have been discharged from tuberculosis hospitals, with a view to building up gradually a general organization.

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(From Our Regular Correspondent)

July 29, 1924

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succeeded in securing a countless number of passages with a virus, which he considers, therefore, as fixed. From the anatomic standpoint, only the lesions of the gray substance are considered as specific, especially those at the level of locus niger (neuronophagia). Experimental researches have shown that the encephalitogenic virus has an affinity for the nervous tissue, the skin and the cornea. We are dealing here with a neurotropic ectodermosis, as is shown by the experiments on rabbits, which, after inoculation with a drop from a vesicle of herpes, develop keratitis and, later, symptoms of encephalitis. The author is studying at present a vaccine derived from the brain of a rabbit. When an injection is made into the cerebrospinal fluid, a marked reaction is produced. He reports results in both the acute and the parkinsonian phase.

GENERAL PARALYSIS AND MALARIA

Dr. Ley, in reporting the results of treatment of patients with general paralysis through inoculation with malaria, pointed out that he had obtained nearly 40 per cent of recoveries. After the administration of quinin has caused the malarial symptoms to abate, treatment with tryparsamide, supplied by the Rockefeller Institute of New York, seems to be frankly superior. In view of the cures accomplished, Dr. Ley raises the question whether it will not be necessary to modify the medicolegal aspects of general paralysis. Does the supposed incurability of these patients still permit us to give certain advice or to apply the principle of the right of divorce with reference to the mentally sick?

INSULIN IN THE TREATMENT OF DIABETES

Dr. Labbe of Paris presented with remarkable clearness the problem of the treatment of diabetes with insulin. This new substance is, above all, the remedy for acidosis even more than for glycosuria. It should be administered especially to patients who are threatened with coma. In the treatment of uncomplicated cases of diabetes, the dietetic regimen has the same value as before.

RADIUM TREATMENT OF CANCER

Dr. Bayet described the present status of radium therapy in cancer. In spite of the many objections that have been raised, he still remains an advocate of surgical intervention in making favorable sites accessible for the placing of radium needles, which he leaves in situ for long periods. He discussed also the progress in the use of beta rays, and recalled the necessity of regarding cancer as a general disease of which the cancerous tumor is only one manifestation.

PLEUROTOMY WITH CLOSED THORAX

Many methods have been recommended to accomplish the evacuation of pus without admitting air into the pleural cavity. Dr. Gregoire described a procedure that interested through its simplicity. He makes an incision with a bistoury, obliquely, from below up, and from the surface to the deeper tissues, which are thus cut at different levels and one comes to the surface again at an intercostal space higher up. It is in the nature of a valve incision, consequently, the pus can find egress but the air cannot enter. A narrow ribbon of crutchcouch introduced into the incision prevents too rapid cicatrization.

THE DAY AT LIÈGE

Every year, the organizers of the Brussels medical convention have planned an excursion to some city in the provinces. This year Liège was accorded this honor. At Liège, Professor Willems described his method of screw extension for fractures of the lower extremities. He then gave a talk on immediate active mobilization.

Professor Henrijean, in studying the cardiogram, showed that, in the last analysis, in the stimulation of the pneumo-

gastric and the sympathetic nerves, the modifications of the beatings of the heart seem to reduce themselves to physico-chemical phenomena in which the potassium and calcium ions play the principal role. Under these circumstances, the problem of the action of cardiac drugs must be viewed from a new angle.

BERLIN

(From Our Regular Correspondent)

July 26, 1924

Reforms in the Medical Curriculum and in Examination Requirements

The preliminary investigations looking toward a reform in the medical curriculum and in examination requirements, to which I have referred somewhat in detail in previous letters, were brought to a close some time ago. Final action in the matter has now been taken by the federal ministry of the interior, and the new examination requirements have been published. The results do not seem to be commensurate with the vast amount of time and energy consumed by the investigators and the numerous publications of physicians and university instructors appearing in the form of monographs and articles in medical journals, together with the many special meetings called to discuss the subject. The reason for the apparently inadequate consideration given to the proposals for reform does not lie in any neglect or lack of sympathetic understanding of the problems involved but rather in the general economic stress, which affects very markedly the scientific life of Germany at the present time. It is difficult for persons living outside of Germany to form correct conceptions of conditions here, partly owing to misleading statements contained in the foreign press. Anything in the nature of sweeping reforms would require the lengthening of the medical course, for the ten semesters of study now required are so fully taken up with lectures that any attempt to add further courses would have been out of the question. The lengthening of the course could not be considered at the present time owing to the fact that many students are compelled to earn part or all of their support by working part time in factories, offices, banks, etc. In establishing, therefore, the new medical curriculum and examination requirements all that it seemed feasible to try to accomplish was to make better use of the available time than formerly, and, with this object in view, to make certain changes in the arrangement and duration of the lectures and in the form of the examinations. At some later period, when the essential reason for the torso-like character of the new curriculum—namely, the economic stress—need no longer be considered, it will then be the duty of the universities and the administration authorities to work out a more comprehensive revision than was possible under existing conditions.

With this preliminary explanation, I will proceed to give a survey of the more important changes that were introduced by the new decree. As before the examination of candidates for the degree of doctor of medicine consists of two distinct parts, the preliminary test is given after completion of the natural sciences together with anatomy and physiology, and the medical examination proper after the completion of the full course. But, whereas formerly the preliminary test was held in the middle of the course, it is now given at the end of the fourth semester, so that a longer period (six semesters) may remain for the better clinical training of the future practitioner. The preliminary test covers, as formerly, physics, chemistry, zoology, botany, anatomy and physiology. The requirements in anatomy have been simplified, in physiology, greater emphasis than formerly is placed on physiologic chemistry. As before, two years are devoted to the study of anatomic preparations, and one semester to the study of microscopic anatomic specimens. An important regulation

with reference to the preliminary test is, that in case it is not passed the first time, only one further trial is allowed, and that the second trial must be made before a board of examiners. Exceptions to this rule will be granted only for very particular reasons. The period that must elapse before a second trial may be made ranges from two to six months, dependent on the outcome of the first trial—which places greater restrictions on candidates than formerly. The period of clinical study required—at least six semesters—does not begin to run until the preliminary test has been satisfactorily passed by the candidate. During this three-year period, medical students are required to serve in a satisfactory manner as practicing assistant for two semesters each in the medical, surgical and obstetric clinics, respectively. Students are required, further, to take full, independent charge of at least four obstetric cases, as far as delivery is concerned. For the duration of one semester, they must act as assistants at the eye clinic, the medical and surgical polyclinic, the clinic and polyclinic for children, the psychiatric clinic, the clinics or polyclinics for diseases of the ear, nose and throat, and at the clinic for cutaneous and venereal diseases. They must take part also in a practical course in vaccination technic. They must attend one course of lectures in general pathology and pathologic anatomy, special pathology, topographic anatomy, pharmacology, hygiene, orthopedics and legal medicine. They must take part also in an anatomicopathologic demonstration course, a course in dissection and a course in bacteriology.

The use of the polyclinics for purposes of instruction is an innovation which was introduced in response to demands from all sides. In the test in topographic anatomy, the occupant of the chair and a representative of the surgical clinic, the clinic for internal diseases or the women's clinic will collaborate, the test in pathologic physiology (which may not occupy more than one day) is given by two examiners, one of whom must be a representative of internal medicine. The duration of the test in internal medicine and gynecology has been reduced from seven days to four days, while the test in surgery continues to occupy seven days, during which the candidate is required to visit on four different days the patients assigned to him. The test in ophthalmology covers two days, the tests in otology, laryngology, rhinology, pediatrics, cutaneous and venereal diseases, psychiatry and hygiene, respectively, occupy one day each. A second trial of the clinical examination, in case of failure to pass, is subject to the same regulation described in connection with the preliminary test. The clinical examination must be completed within the space of two years, otherwise, all examination credits won are declared forfeited. Pathologic physiology and legal medicine are subjects newly added to the examination requirements. Another new provision is that in the various subjects consideration must be given to the doctrine of hereditary transmission and to the bearing of medicine on social insurance.

When the candidate has completed his medical examination, he must as formerly, serve a full year as hospital intern. During the year of his internship the candidate must develop further his practical knowledge and capacities, and must give evidence that he possesses a satisfactory understanding of the duties and problems of a member of the medical profession. During his intern year, he must also study a case arising in the field of social insurance or rehabilitation, and prepare and present to the examining board a satisfactory written report in which he discusses with sufficient detail the patient's claim and rights under social legislation. When the candidate or medical intern has completed his year of internship in accordance with the requirements, he is granted his medical diploma—the *Approbation* as it is termed here—which entitles him to practice anywhere within German territory.

Marriages

RICHARD GRAHAM FISH, Alamo, Tenn, to Miss Leila Eleanor Maddox of Poplar Bluffs, Mo., July 30

AUGUSTUS LYNN LONDON BAKER, Dover, N J, to Miss Margaret K Powers of Stanhope, July 16

JULIAN GLADYS HIRSCH, New Orleans, to Mrs Dolly Halford Cowart of Meadville, Miss., July 30

BERNARD CHARLES MARANTZ, New Haven, Conn, to Miss Sadye R Rubin of Brooklyn, June 15

MORTON S BRODY, New Brunswick, N J, to Miss Sophie Adele Sokoloff of New York, July 1

LOUIS BLANCHARD WILSON to Mrs Maud Headline Mellish, both of Rochester, Minn., August 23

JULIAN KILLEM QUATTLEBAUM to Miss Helen Burkhalter, both of Savannah, Ga., June 21

ELMER E SEXTON, Carlinville, Ill, to Miss Katherine Homer of St Louis, recently

CORVIN SPENCER MAYES, Springfield, Ill, to Miss Lola Rane of Rochester, July 28

GEORGE ROBERT MARSHALL to Miss Barbara Rosella Kelly, both of Seattle, June 11

JACKSON WILEY LANDHAM to Miss Belle Moon, both of Atlanta, Ga., July 14

ARTHUR SAUL SANDLER to Miss Reba Oster, both of Chicago, August 24

Deaths

Louis Julien Picot, Littleton, N C, Jefferson Medical College of Philadelphia, 1873, member, and at one time president and secretary, of the Medical Society of the State of North Carolina, trustee of the State University of North Carolina, Chapel Hill, 1900-1909, for many years medical superintendent of the State Hospital, Raleigh, member and secretary of the state board of medical examiners, 1891-1896, aged 71, died, August 14, at a hospital in Norfolk, Va.

George Whipple Hubbard, Nashville, Tenn, Vanderbilt University Medical Department, Nashville, 1879, one of the founders, president emeritus, and formerly dean, professor of chemistry, materia medica and therapeutics at the Meharry Medical College Nashville, at one time superintendent of the hospital which bears his name, aged 83, died August 22

Thomas Henry Canning, Port Henry, N Y, University of Vermont College of Medicine Burlington, 1900, member of the Medical Society of the State of New York, served in the M C U S Army with the rank of captain, during the World War, formerly health officer of Port Henry and Moriah, N Y, aged 46, died, August 3 of pneumonia

Brandreth Symonds, New York, Medical Department of Columbia College, New York, 1884, lecturer on life insurance at his alma mater 1907-1911, for thirty six years connected with the Mutual Life Insurance Company and since 1907 its chief medical director, author of *Manual of Chemistry*, aged 61, died August 10 of bronchopneumonia

Charles Willis McLain, Gurdon, Ark, Memphis (Tenn) Hospital Medical College, 1909, member of the Arkansas Medical Society, served in the M C, U S Army with the rank of captain, during the World War, aged 42, was killed July 26, when the automobile in which he was driving was struck by a train

Herman Gilbert, Madison, Wis, University of Heidelberg German, 1897, past president of the Dane County Medical Society, on the staffs of the Morningside Sanatorium the Madison General Hospital and St Mary's Hospital, where he died, August 13 following a long illness, aged 52

A J Monahan, Pueblo, Colo, Medical College of Ohio, Cincinnati, 1890, member, and at one time president of the Colorado State Medical Society, member of the state board of medical examiners, county health officer, formerly city and county physician, aged 55, was instantly killed, July 25, when the automobile in which he was driving overturned

Samuel Elisha Woody, Louisville, Ky, Louisville Medical College, 1879, formerly professor of diseases of children at the Kentucky University Medical Department, Louisville,

aged 70, died August 10 at the Norton Memorial Infirmary, of heart disease

Warren Loring Beebe ☉ St. Cloud, Minn., Medical College of Ohio Cincinnati 1873 Bellevue Hospital Medical College, New York, 1876, aged 76, died August 13, at the Northern Pacific Railway Hospital, St. Paul, following a long illness

Otto G. A. Oetting, Concordia Mo., University of Louisville (Ky.) School of Medicine, 1900, member of the Missouri State Medical Association, aged 47, died, June 23 at the Trinity Lutheran Hospital, Kansas City, as the result of a carbuncle

William Leslie Cornwell, Bridgeton N. J., Jefferson Medical College of Philadelphia 1906, member of the Medical Society of New Jersey, aged 41, died August 4, at the Bridgeton Hospital following an appendectomy

William Sylvester Thompson, Augusta, Maine (years of practice) member and chairman of the Maine Board of Registration in Medicine, member of the board of education, aged 71 died August 5 of chronic myocarditis

William Gregg Crumbley, Atlanta, Ga., Atlanta College of Physicians and Surgeons 1912 served during the World War, aged 41, died August 9 at Clayton of a self-inflicted bullet wound while suffering from ill health

Smith Seibert Davis, Boonsboro, Md., University of Virginia Department of Medicine Charlottesville 1875, member of the Medical and Surgical Faculty of Maryland, aged 70 died August 3 following a long illness

John H. Chew ☉ Chicago University of Maryland School of Medicine Baltimore 1863 president and emeritus professor of medicine at the Chicago Polyclinic, aged 82, died, August 14 of carcinoma of the prostate

Nathaniel Lorenz A. K. Slamberg ☉ Eastport, Idaho, University of Illinois College of Medicine Chicago, 1892, acting assistant surgeon U. S. Public Health Service, aged 69, died August 1, of cerebral hemorrhage

John William D. Mayes, Ithopolis Ill., Louisville (Ky.) Medical College, Louisville 1876, formerly county physician of Sangamon County and president of the Ithopolis Board of Education, aged 71 died August 1

Samuel Wilson Hobson ☉ Newport News Va., Medical College of Virginia, Richmond 1891, formerly member of the state board of health, aged 53, was found dead in bed, August 9, of heart disease

John T. Harris, Walterhill, Tenn., University of Tennessee College of Medicine Memphis, 1898, member of the Tennessee State Medical Association, aged 51, died, August 4, at a hospital in Nashville

David Dill Wilson ☉ Nortonville Kansas, Rush Medical College, Chicago, 1890 formerly lecturer on orthopedic surgery at the Kansas Medical College, Topeka, died at his home August 3, aged 63

Allen Bonner McConnell ☉ Fresno, Calif., Cooper Medical College San Francisco 1901 aged 46, died August 8 at the University of California Hospital, San Francisco, of cholecystitis and appendicitis

Notman Guthrie Catanach, West Chester, Pa., Jefferson Medical College of Philadelphia 1896 member of the Medical Society of the State of Pennsylvania, aged 48, was found dead in bed, August 16

Mary Helen Barker Bates, Denver, Woman's Medical College of Pennsylvania Philadelphia, 1873, for six years member of the board of education, aged 78, died, August 3, following a long illness

James H. Ligon, Heflin Ala., Vanderbilt University Medical Department Nashville Tenn., 1891, aged 50 was instantly killed August 2, when the automobile in which he was driving overturned

Alfred M. Yundt, Mulberry, Ind., Jefferson Medical College of Philadelphia 1881, aged 68, died, August 4 at St. Mary's Hospital, Rochester, Minn., following an operation for carcinoma of the rectum

Alexander H. C. Rowand ☉ Philadelphia, University of Pennsylvania School of Medicine, Philadelphia, 1893, formerly on the staff of the Wills Hospital, aged 71, died, August 13

During R. Kinloch, Utica N. Y., Albany Medical College Albany 1895 member of the Medical Society of the State of New York, died August 7, aged 54 following a long illness

Edwin Theodore Hayward, Waterford, Ohio, Bellevue Hospital Medical College, New York, 1896, member of the Ohio State Medical Association, aged 52, died, June 8, of angina pectoris

Asa Howard Twitchell, Oldtown, Maine, Medical School of Maine, Portland 1882, member of the Maine Medical Association, aged 72, died, August 3, following a long illness

Florence Augustine Sullivan ☉ Haverhill Mass., Baltimore Medical College 1900 member of the board of health, on the staff of the Hale Hospital, aged 48, died, July 15

Charles William Ray, Chester, Vt., College of Physicians and Surgeons, Baltimore, 1880, member of the Vermont State Medical Society, died, July 31, of heart disease

Frederick Davis Mount, Philadelphia Hahnemann Medical College of Philadelphia, 1879, aged 67 died, August 1, at the Jefferson Hospital, following an operation

Edwin S. Heiser, Lewisburg, Pa., Jefferson Medical College of Philadelphia, 1880 also a druggist, aged 68, died, August 3, of chronic lymphatic leukemia

Ernest Perry Livingston ☉ New York, Medical Department of the University of the City of New York, 1892, died, July 29, of cerebral hemorrhage

Francis Bean, Kansas City, Mo., Medical College of Ohio Cincinnati, 1876 member of the Illinois State Medical Society, aged 79, died, August 4, following a long illness

Foster E. Wilson, Huntington Beach, Calif., Cincinnati (Ohio) College of Medicine and Surgery 1877, aged 71, died, July 30, at the Las Encinas Hospital, Pasadena

August A. Des Lauriers, New Orleans, University of Minnesota Medical School, Minneapolis 1903, formerly a practitioner in Duluth Minn., aged 45, died, August 4

George B. Perry ☉ Brogueville Pa., University of Pennsylvania School of Medicine Philadelphia, 1896, aged 60, died July 31, following a long illness

William C. Nunn, Richmond Va., Jefferson Medical College of Philadelphia 1856 Confederate veteran, formerly state senator, aged 89, died, August 7

William Penn Hammond, Boston, Medical School of Harvard University Boston 1873, aged 80, died, August 9, at Clifton following a long illness

Edward Meyer ☉ Manitowoc Wis., Rush Medical College Chicago 1887, aged 58, died, August 12, at the Holy Family Hospital of heart disease

Joseph Broders Grimes, Pittsburgh, Bellevue Hospital Medical College, New York, 1875, aged 72, died, July 9, of cerebral hemorrhage

Francis S. Grimes, Deep River Iowa, Bellevue Hospital Medical College 1862, Civil War veteran, aged 91, died, August 7, of senility

Elizabeth M. Squier, Utica N. Y., University of Buffalo Department of Medicine 1893, aged 78, died, August 4, of cerebral hemorrhage

James B. Stevens, Valdosta Ga., Meharry Medical College Nashville Tenn., 1901, also a druggist, aged 55, died suddenly, July 17

Francis R. Seager, Bridgen, Ont., Canada, McGill University Faculty of Medicine, Montreal, Que., 1870, aged 78, died, July 15

Horace Greeley Murdock, Taylors Falls Minn., Rush Medical College, Chicago, 1881, aged 66, died, August 4, of heart disease

William Edward Spencer, Whitestone, N. Y., Long Island College Hospital Brooklyn, 1881, aged 64, died, July 28

Charles H. Fegers, Sr., McHenry, Ill., Chicago Medical College, 1879, aged 78, died, August 7, of heart disease

Charles William McGavren, Pasadena, Calif., Rush Medical College, Chicago, 1879, aged 67, died, August 3

Joseph Weathersby, Taylorsville Miss. (licensed, Mississippi, 1882), aged 85, died, June 23, of senility

Spencer C. Relyea, Dallas, Texas, Louisville (Ky.) Medical College, 1881, aged 70, died, August 5

William A. Buchanan, Paris, Ill., Miami Medical College, Cincinnati, 1875, aged 76, died, August 8

Corrections—The reports in THE JOURNAL of the death of Drs. T. Henry Davis, Richmond Ind. (August 16, p. 549) and of Jacob Milton Hopkins, Alexandria, Va. (August 23, p. 631) were in error. It was Dr. Davis' wife who died, and a Jacob Hopkins of Galax, Va.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

FATAL ANAPHYLAXIS FROM HEMOPLASTIC PREPARATIONS

Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following report
W A PUCKNER, Secretary

IN THE JOURNAL for May 10, 1924, Dr J B De Lee, Chicago, reported the case of a mother who suffered a severe hemorrhage following labor. The bleeding could not be stopped by the use of pituitary extract or ergot, but the uterus was packed and the hemorrhage ceased. After the packing was removed, however, the discharge was profuse and red and, since ergot and hydrastis failed to cause any diminution it was decided to administer a hemoplastic preparation (Hemoplastin—Parke, Davis and Co.) Within one and one-half minutes after this preparation was administered, the patient developed severe symptoms and died five or six minutes later. All attempts at resuscitation failed. It was discovered afterward that the patient was a sufferer from asthma and that the attacks were elicited by even the mere approach of a horse. Dr De Lee stated that record had been found of another instance in which death occurred a few minutes after the administration of hemoplastin to a woman sensitized by the previous injection of horse serum.

Because of the importance of determining definitely the anaphylactic possibilities of various blood coagulants, the Council arranged with Dr Ludvig Hektoen to examine specimens of the various coagulants available to determine whether or not they contained material which might produce such reactions. He was provided with specimens of the following:

Coagulen Ciba
Fibrogen Merrell
Hemagulen Lilly
Kephalin Armour
Hemostatic Serum Lapenta (Hemoplastin) P D & Co

Thromboplastin Lederle
Thromboplastin Squibb
Thromboplastin Hypodermic Squibb
Thromboplastin Solution Armour
Precipitated Horse Serum (Coagulose) P D & Co

It was found that all of the specimens contained animal protein (in most products horse or beef proteins were present). In most cases the labels and descriptive literature did not state the precise nature of the coagulant. Obviously in the hurry and excitement of the moment for coagulants are usually used in emergencies, the physician might overlook the danger of introducing these foreign proteins into a hypersensitive person. Even the superficial application to a wounded surface of coagulants of this sort might be followed by disastrous consequences. Since all of these products contain animal proteins, and in most instances horse or beef proteins, physicians should be warned against their use in any case in which there is a hypersensitivity to such substances. Hypersensitivity to horse proteins is not at all an infrequent condition. Much could be gained by having all such preparations labeled correctly and definitely. The label should contain not only a definite statement of the composition of the product and the character of the protein present, but also information which would cause the physician to inquire into the patient's history to determine whether or not sensitivity existed and which might induce him to determine by preliminary administration of small doses, whether or not a reaction would occur.

Measles Incidence in 1923—In 1923, 211,372 cases of measles were reported by seventy-seven cities. The estimated expectancy was 112,542 cases. The measles case rate in 1923 was 7.11 per thousand population. In 1922 it was 5.62 per thousand. Seventy-two cities were included in the figures for 1922.—*Pub Health Rep* 39 1667 (July 11) 1924

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

SULPHUR DIOXID TOXICITY

To the Editor—Please state whether or not sulphur dioxide fumes in not very concentrated form but breathed over a long period of time would have to be considered injurious to the respiratory organs and if so how?
JULIUS LINGENFELDER M.D. Rosebud, Mo

ANSWER—To those not accustomed to sulphur dioxide, the inhalation of it produces irritation of the respiratory passages, and extreme discomfort in dilutions of 0.001 per cent by volume, 0.1 per cent is stated to be promptly fatal by paralysis of the respiratory center (Ogata, 1884, and K B Lehmann, 1893).

Dr T F Harrington of the Massachusetts Board of Labor reported a fatal case of sulphur dioxide poisoning in a man, aged 42, employed as a night foreman in a chemical establishment, with symptoms of cough, dyspnea and suffocation. Necropsy revealed marked irritation of the respiratory tract, edema of the lungs, marked congestion of the liver, spleen and kidneys, bright red eruptions on the elbows, and marked cyanosis.

According to Hayhurst and Kober (*Industrial Health*, Philadelphia, P Blakiston's Son & Co, 1924 p 661), in moderate concentrations sulphur dioxide is considered to be well borne without inconvenience or injury, persons accustomed to the gas bear very well a proportion of from 0.003 to 0.004 per cent of sulphur dioxide in the air. Susceptible persons, at the beginning of their employment in an atmosphere containing sulphurous acid manifest a transient irritation of the mucous membrane of the respiratory organs and of the eyes. In severe action, the symptoms are those of spasmodic cough with secretion of tenacious often blood-tinged, mucus. The protracted effect of a high degree of concentration is livid discoloration of the mucous membranes, bronchial catarrh, croupous angina of the bronchi and their branches and inflammatory areas in the lungs, and disturbances of digestion.

SCARLET FEVER TOXIN

To the Editor—We have been reading with great interest the articles in THE JOURNAL during the last few months regarding the development of means to prevent scarlet fever. When will this scarlet fever toxin be available to the profession for doing immunity tests? Is there any indication that the toxin and antitoxin will soon be available for treating and immunizing patients?
W E WILSON M.D. Northfield Minn

ANSWER—The scarlet fever toxin has been furnished by the John McCormick Institute to some state and city health departments. Physicians inquiring for this material are therefore referred to their local health department.

There is an increasing demand for standardized toxin that the Drs Dick believe should be met, however because the toxin must be standardized on human beings, the commercial companies are going to find it difficult to standardize accurately. Drs Dick suggest that for the present some fund should be established for the production and distribution of the toxin and for furnishing instruction as to its use. An effort should be made to get it into the hands of the health officers and let them in turn instruct physicians in its use.

CARBONA' JAG

To the Editor—In THE JOURNAL August 9 G W H asks regarding the use of Carbona inhalations to produce intoxication.

I have heard of this use once before. When my daughter returned from school in June she told of a new amusement known as the Carbona Jag which was in vogue among a certain group of young people. Parties composed of members of both sexes go to a nearby park for their seance. On one occasion mentioned a girl got hilarious, rolled on the ground and laughed immoderately. She was so long in recovering from the effects of the drug that she did not get back to the dormitory before the closing hour and had to be smuggled in.

RUPERT M PARKER M.D. Chicago.

DOSAGE INTERVAL FOR ARSPHENAMIN

To the Editor—Is there an accepted standard length of time between intravenous injections of (1) arspenamin (2) neo-arsphenamin and (3) sulpharsphenamin that is ten days, seven days or three times a week?
H L D M.D.

ANSWER—The usual intervals are from five to seven days. There is no accepted standard interval.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA	Juneau	Sept 2	Sec	Dr Harry C DeVighe	Juneau
ARIZONA	Phoenix	Oct 7 8	Sec	Dr W O Sweet	404 Heard Bldg Phoenix
DISTRICT OF COLUMBIA	Washington	Oct 14	Sec	Dr Edgar P Copeland	Stonleigh Court Washington
FLORIDA	Tallahassee	Oct 14 15	Sec	Dr Wm Rowlett	Citizens Bank Bldg Tampa
GEORGIA	Atlanta	Oct 14 16	Sec	Dr C T Nolan	Marietta
HAWAII	Honolulu	Oct 13 16	Sec	Dr G C Milnor	401 So Beretania St Honolulu
IDAHO	Boise	Oct 7	Dir	Mr Chas Laurensen	Boise
IOWA	Des Moines	Oct 13	Sec	Dr Rodney P Fagen	Capitol Bldg Des Moines
KANSAS	Topeka	Oct 14	Sec	Dr Albert S Ross	Sibetha
MASSACHUSETTS	Boston	Sept 9 11	Sec	Dr Charles E Prior	144 State House Boston
MICHIGAN	Lansing	Oct 14 16	Sec	Dr B D Harrison	707 S Stroh Bldg Detroit
MINNESOTA	Minneapolis	Oct 7 9	Sec	Dr Thos McDavitt	539 Lowry Bldg St Paul
MONTANA	Helena	Oct 7	Sec	Dr S A Cooney	Power Bldg, Helena
NEW HAMPSHIRE	Concord	Sept 11 12	Sec	Dr Charles Duncan	Concord
NEW MEXICO	Santa Fe	Oct 13 14	Sec	Dr W T Joyner	Roswell
OKLAHOMA	Oklahoma City	Oct 7 8	Sec	Dr J M Byrum	Shawnee
PORTO RICO	San Juan	Sept 2	Sec	Dr D Briscoechea	San Juan
RHODE ISLAND	Providence	Oct 23	Sec	Dr B U Richards	State House Providence
UTAH	Salt Lake City	Oct 7	Sec	Mr J T Hammond	Salt Lake City
WYOMING	Cheyenne	Oct 6 8	Sec	Dr J D Shingle	226 Citizens Bank Bldg Cheyenne

Massachusetts May Examination

Dr Charles E Prior secretary, Massachusetts Board of Registration in Medicine, reports the written, oral and practical examination held at Boston May 13-15 1924. The examination covered 17 subjects and included 70 questions. An average of 75 per cent was required to pass. Of the 33 candidates who took the physicians and surgeons examination, 25, including 1 osteopath passed and 8 failed. One candidate was licensed on endorsement of credentials. The following colleges were represented:

College	PASSED	Year Grad	Per Cent
Hahnemann Medical College and Hospital of Chicago	(1908)	75	
Loyola University School of Medicine	(1918)	78 5	
State University of Iowa College of Medicine	(1919)	85 5	
College of Phys and Surgs Boston	(1918) 78 4 (1923) 75		
Harvard University	(1910) 86 2 (1920) 83 4 (1922) 80 6 89 7	93 5	
(1923) 88 1			
Middlesex College of Medicine and Surgery	(1923)	77 77 7	
Tufts College Medical School	(1923) 82 1	83 6	
St Louis College of Physicians and Surgeons	(1923)	81 3	
New York Homeopathic Med Coll and Flower Hosp	(1920)	78 5	
Dalhousie University Faculty of Medicine	(1923)	86 6	
School of Medicine and Surgery Oporto Portugal	(1903)*	77 1	
University of Moscow Russia	(1916)*	84 5	
University of St Vladimir Kiev Russia	(1912)*	75	
University of Warsaw Russia	(1920)*	79 6	
Syrian Protestant College Beirut	(1911)* 79 4 (1912)*	78 8	
Osteopath		76 7	
College	FAILED	Year Grad	Number Failed
Middlesex College of Medicine and Surgery	(1922) (1923 2)		3
St Louis College of Phys and Surgeons	(1921) (1923 3)		4
National University Athens Greece	(1922)*		1

College	ENDORSEMENT OF CREDENTIALS	Year Grad	Endorsement with
Johns Hopkins University		(1921)	N B M Ex.
* Graduation not verified			

Health Instruction in Outpatient Department—The outpatient department gives an opportunity for instruction in health. The approach to health through sickness may not be the ideal approach, but for the adult, at any rate it makes it possible to reach many individuals who would not otherwise come in contact with health teaching. Frequently the treatment and cure of a disease involve a modification in the manner of living or the manner in which a disease was acquired may point the way of avoiding such infections in the future. The care of the individual patient presents the opportunity to point out to that patient methods of maintaining health.—Smith, R M. *Hosp Social Service* 10 24 (July) 1924

Book Notices

LOCAL ANAESTHESIA METHODS AND RESULTS IN ABDOMINAL SURGERY By Prof Dr Hans Finsterer Surgeon in Chief Vienna Hospital of the Brothers of Charity. Authorized English version by Joseph P F Burke M D Sc D LL D Attending Surgeon Buffalo Hospital of the Sisters of Charity. Cloth Price \$4 Pp 349 with 42 illustrations. New York Reiman Company 1923

This work is divided into a general part and a special part. The first begins with a historical introduction including the development of local anesthesia in abdominal surgery. It then points out the importance of local anesthesia as influencing the results of abdominal operations, takes up the indications and contraindications of local anesthesia, discusses the various solutions and techniques of injections and discusses the sensibilities and innervation of the abdominal cavity and the method of anesthetizing in abdominal wall anesthesia, conductive anesthesia of the mesenteries, paravertebral anesthesia, splanchnic anesthesia according to Kappis, splanchnic anesthesia with open abdomen according to Braun, parascapular anesthesia, epidural anesthesia (sacral anesthesia) and lumbar anesthesia. The second goes into the detailed technique of local anesthesia in various operations, grouping these into three classes: (1) minor operations, (2) operations of medium severity, such as operations for the various types of external hernia, appendicitis and exploratory laparotomy, and (3) major abdominal operations. The discussion of the latter comprises more than half the book and is in reality not only a detailed treatise of the technique, contraindications and indications of the various types of anesthesia employed in operations within the abdomen but also a textbook of abdominal operative surgery dealing particularly with operations for gastric and duodenal ulcers and carcinoma. The book is essentially a record of Finsterer's experiences with statistics of anesthesia and of operative methods, particularly for the cure of gastric and duodenal ulcers and carcinoma. The author goes into detail in his plea for radical gastric resection for gastric and duodenal ulcers and his experience and statistics sanction the position he takes, for his low mortality and excellent late results cannot be ignored. While his views may be at variance with the opinions of many conservative surgeons they will be of great interest to all American surgeons. The work gives an excellent account of the various types of local anesthesia and their relative indications in abdominal operations. Unfortunately, the book is not so easy to read in its English form as was the original for those who read German.

THE ANATOMY OF THE NERVOUS SYSTEM From the Standpoint of Development and Function By Stephen Walter Panson M D Ph D Professor of Anatomy in Northwestern University Medical School. Second edition. Cloth Price \$6 50 net 1 p 421 with 284 illustrations. Philadelphia W B Saunders Company 1923

The anatomy of the nervous system is presented from the dynamic point of view, the developmental and functional significance of structure being emphasized. The needs of the medical student have been kept in mind and those phases of the subject emphasized which are most likely to be of value in his subsequent work. To this edition three colored figures illustrating the blood supply of the brain have been added also a series of figures representing sections through the basal ganglions and internal capsule and brief accounts of twelve clinical cases selected to illustrate the functional significance of parts of the nervous system. There is an outline for a laboratory course in neurology, and an extensive bibliography.

WAR AGAINST TROPICAL DISEASE Being Seven Sanitary Sermons Addressed to All Interested in Tropical Hygiene and Administration By Andrew Balfour CB CMG Director in Chief Wellcome Bureau of Scientific Research. Cloth Price 12 shillings 6 pence net Pp 219, with 180 illustrations. London Bailliere Tindall & Cox

This volume, issued under the auspices of the Wellcome Bureau of Scientific Research contains much advice on the hygiene of the tropics, including the following subjects: aspects of tropical sanitation, tropical problems in the New World, preventive inoculation against typhoid and cholera, the medical entomology of Saloniki, sanitary and insanitary

makeshifts in the eastern war areas, the problem of hygiene in Egypt, and the palm from a sanitary standpoint. The book is written in a simple narrative form, with numerous anecdotes and a large number of excellently chosen illustrations, which carry to the reader not only the technical aspects of the problem, but also the exotic atmosphere of the tropics. For the general reader who wishes a survey of this unusual phase of medical science, the book of Dr Balfour may be heartily recommended.

FIRST STEPS IN ORGANIZING A HOSPITAL. An Exposition of Ideals and Principles Incident to the Inception and Organization of a Hospital. By Joseph J. Weber. M.A. Editor: The Modern Hospital. Cloth. Price \$2.75. Pp. 205. New York: Macmillan Company, 1924.

The introduction of this book is devoted largely to statistics on the growth and extent of hospital service in the United States, which are partly quoted from *THE JOURNAL*. The 232,099 beds allotted to homes for orphans, the aged, the blind and the deaf doubtless represent the total capacity, since recent compilation shows that 24,936 beds in these institutions are used for hospital purposes. The first step toward a hospital is a survey of the community. This is the subject of a long chapter giving important and valuable advice on how to find whether the given community needs a hospital and, if so, what kind. The second chapter tells how to get the organization under way and how to secure the interest of the public. Other chapters deal with the duties and responsibilities of the board of trustees, and valuable suggestions on financing the hospital construction and the organization of auxiliary bodies. The appendix contains suggested constitutions and by-laws and articles of staff organization, as well as forms of agreement between owner and architect and other valuable data. It is not possible to write a book that will answer all questions or that will touch on all the problems of a given community. It will always be necessary to use a great deal of original thought and investigation in adapting a proposed hospital to the needs of any community. Mr. Weber's book is of handy size and, at the same time, goes about as far as can be expected of a book toward offering assistance to prospective organizers and builders of hospitals.

THE WONDER OF LOURDES. What It Is and What It Means. By John Oxenham. Cloth. Price 90 cents net. Pp. 62, with 16 illustrations. New York: Longmans, Green & Co., 1924.

Mr. John Oxenham is a journalist who seems to have written some forty novels and some sixteen books of poetry in his brief career. It appears now that he has visited Lourdes and become convinced of its healing virtues, testifying to the fact that four thousand incurables were there healed. His concluding sentence is, "For myself, I believe Lourdes to be a genuine revelation of the goodness of God to a world which, every day, stands more and more in need of it." Properly to discuss Mr. Oxenham's book would require a new marshaling of all the established facts regarding mental and faith healing, in view of the fact that Mr. Oxenham is a prolific writer of novels, and not a scientist, it seems hardly worth while.

PHYSICAL DEVELOPMENTAL RECORD FOR AMERICAN MALES. Paper. Cold Spring Harbor: Carnegie Institution of Washington. Eugenics Record Office.

The department of genetics of Carnegie Institution has prepared a special form to be used by parents in recording the physical development of their children, making a few simple measurements each month over a certain period of years, and agreeing to report annually to the Eugenics Record Office the results of the examinations. The record covers the period from 3 to 20 years of age.

THE PRINCIPLES AND PRACTICE OF DERMATOLOGY. Designed for Students and Practitioners. By William Allen Pusey, A.M., M.D. Fourth edition. Cloth. Price \$10. Pp. 1257, with 520 illustrations. New York: D. Appleton & Co., 1924.

This textbook, which has served the medical profession for a period of seventeen years, continues to meet the requirements of an up-to-date volume, by repeated careful revisions. In his preface, Dr. Pusey calls particular attention to the fact that the subjects of eczema and syphilis have recently received a great share of the study of dermatologists, from the point of view of etiology in the case of eczema, and

of treatment in syphilis. These advances have been given special consideration in the present volume. Dr. Pusey's book commends itself particularly on account of its extraordinary completeness. It has a double value, serving as an excellent book for students and as a reference volume for the practitioner.

DISEASES OF THE EYE. A Handbook of Ophthalmic Practice for Students and Practitioners. By George E. de Schweinitz, M.D., LL.D., Sc.D. Professor of Ophthalmology in the University of Pennsylvania. Tenth edition. Cloth. Price \$10 net. Pp. 865, with 441 illustrations. Philadelphia: W. B. Saunders Company, 1924.

The last previous revision of this book was made in 1921. In the present edition, special attention is given by the author to newer technical methods which have enabled ophthalmologists to extend still further their investigations, and to apply new methods in diagnosis and treatment. Special attention is paid also to such newer aspects of ophthalmology as agricultural conjunctivitis, senile changes in the optic nerve, and the use of new local anesthetics, such as butyn. This volume is a standard text, as indicated by the numerous and thorough revisions, expressive of constant demand.

SEX AND SOCIAL HEALTH. A Manual for the Study of Social Hygiene. By T. W. Galloway, Ph.D., Litt.D. Cloth. Price \$2.50 net. Pp. 360. New York: The American Social Hygiene Association, 1924.

The author has collected here some extensive discussions of various phases of sex in life. Before publication, the material was issued in mimeograph form to various persons who have given special attention to such matters, in order to secure revisions and suggestions. It was hoped to prepare a volume that might serve as a community text and as a basis for discussion by parent teacher groups, as well as a reference book in schools and colleges. The volume is divided into three parts, the first dealing with sex in life, the second with the education of young people in respect to sex, and the third, with the community as a whole. The work seems to be sound in its point of view, and certainly provides a vast amount of information as to the various phases of sex life. Not every one will agree perhaps, with its philosophy, but it gives at least the majority opinion on every ethical question. For any one interested in developments in this field of education, the book is practically indispensable, since it constitutes an excellent guide to the control of amusements of children, and of organizations and institutions so as to lead to better sex hygiene.

LEHRBUCH DER RONTGENDIAGNOSTIK. Erster Band und Zweiter Band. Herausgegeben von A. Schittenhelm. Paper. Price \$17.65. Pp. 1283, with 1,035 illustrations. Berlin: Julius Springer, 1924.

This encyclopedic volume is the result of the collaboration of many authors from Germany and Austria. It comprises the whole field of roentgen-ray diagnosis and a fairly complete description of the physics of the roentgen ray, methods of fluoroscopy, roentgenography and plate development. Each article describes the technique of film taking and discusses the fluoroscopic and roentgenographic views in various pathologic conditions dealt with in that section. The book is profusely illustrated by both plate reproductions and explanatory diagrams, and contains a voluminous bibliography.

THE MEDICAL DEPARTMENT OF THE UNITED STATES ARMY IN THE WORLD WAR. Volume XI. Surgery. Part Two. Empyema. By Lieut. Col. Edward K. Dunham, M.C. Maxillofacial Surgery. By Lieut. Col. Robert H. Ivy, M.O.R.C. and Major Joseph D. Eby, D.O.R.C. Ophthalmology (United States). By Brig. Gen. George E. de Schweinitz, M.O.R.C. Ophthalmology (American Expeditionary Forces). By Col. Allan Greenwood, M.O.R.C. Otolaryngology (United States). By Lieut. Col. S. J. Morris, M.C. Otolaryngology (American Expeditionary Forces). By Col. James F. McKernon, M.O.R.C. Prepared under the direction of Major Gen. M. W. Ireland, M.D., Surgeon General of the Army. Cloth. Price \$3.50. Pp. 827, with illustrations. Washington: Government Printing Office, 1924.

The newest volume in the series of fifteen that are to consider the work of the Medical Department of the United States Army in the World War is devoted to certain phases of surgery, including particularly empyema, maxillofacial surgery, ophthalmology and otolaryngology. In the preparation of this volume, special help was given and articles were written by Lieut. Col. Edward K. Dunham, Lieut. Franklin A. Stevens, Major Evarts A. Graham and Col. William L.

Keller, who are largely responsible for the section on empyema. This section contains eight chapters discussing methods of collecting data, the diagnosis of empyema, and the various aspects of surgical treatment. The reports are illustrated by sixty-one tables, seventy-one charts, eight plates and 137 figures. This numerical cataloguing of special features is a slight indication of the scope of the report. The section on maxillofacial surgery was prepared by Lieut. Col. Robert H. Ivy and Major Joseph D. Eby. In a footnote to this report, the authors name all of those who aided in preparing the material for publication. The section on ophthalmology was prepared by Brig. Gen. George E. de Schweinitz with the aid of Col. Allan Greenwood. Col. James F. McKernon worked up the section on otolaryngology. This volume is one of the most practical and instructive that has been added to the series. It constitutes an excellent statement of the present status of our knowledge of the phases of war diagnosis and treatment that it covers. The printing is excellent and creditable to all who had a part in the production of the work.

LES PROCESSUS DE DESINTÉGRATION NERVEUSE. Par le Dr. Ivan Bertrand, Chef de laboratoire à la Faculté de médecine de Paris. Préface du Professeur Pierre Mialle. Paper. Price, 20 francs net. Pp. 209 with 100 illustrations. Paris: Masson et Cie, 1923.

In this well illustrated book, the author has endeavored to trace the processes of degeneration of nerve tissue, first in a general way and later as it occurs in various diseases. Much of the material is derived from original observations, but is combined and correlated with those of modern workers. The book is well arranged and adheres to facts, pointing out the many possibilities of error and the difficulties dependent on the nature of the investigation. The bibliography is excellent, and there is a detailed index. Workers in the field of neuropathology will find the book of the greatest value and assistance both technically and in interpretation.

VENEREAL DISEASE. Its Prevention, Symptoms and Treatment. By Hugh Wanser, Barly M.C. Hon. Sec. Society for the Prevention of Venereal Disease. Second edition. Cloth. Price 7 shillings 6 pence net. Pp. 176 with 58 illustrations. New York: Macmillan Company, 1924.

This presents the subject of syphilis and gonorrhea from the point of view of an English physician. Little space is given to any particular point so that the work can have an interest only for students and general practitioners. The chapter on prevention is well worth reading; that on treatment gives the book real value.

THE HEALTH BOOK. By Royal S. Copeland, M.D. Cloth. Price \$2. Pp. 421. New York: Harcourt, Brace & Co., 1924.

Dr. Copeland has gathered under one cover much of the material that has appeared in his writings in the newspapers. The book contains numerous practical hints on first aid and on the care of minor diseases. Dr. Copeland is careful to emphasize repeatedly that most of the conditions discussed will require also the care of a physician.

DER HEILIGE STAND DER LEHRE VON DEN CARCINOMEN IN BESONDERHEIT DER CARCINOME. Von Dr. Carl Sternberg, o. o. Professor für Pathologische Anatomie an der Universität Wien. Paper. Price 65 cents. Pp. 98. Vienna: Julius Springer, 1924.

This is an excellent statement of what is known in Germany at present concerning cancer. Little of the valuable work done in other countries has been taken into consideration, and to that extent the review fails to be a complete one.

DISEASES OF THE CHEST AND THE PRINCIPLES OF PHYSICAL DIAGNOSIS. By George William Norris, A.B., M.D., Professor of Clinical Medicine in the University of Pennsylvania, and Henry R. M. Landis, A.B., M.D., Director of the Clinical and Sociological Departments of the Henry Phipps Institute of the University of Pennsylvania. With a chapter on the Electrocardiograph in Heart Disease by Edward B. Krumboltz, Ph.D., M.D., Director of Laboratories of the Philadelphia General Hospital. Third edition. Cloth. Price \$9.50 net. Pp. 907 with 433 illustrations. Philadelphia: W. B. Saunders Company, 1924.

This edition has been revised, with the addition of brief accounts of certain rare conditions, with bibliographic notes to the original literature. The book is well known for its emphasis on the fundamentals of acoustics on which percussion and auscultation rest, for the correlation of pathology

and physical findings, and for its plentiful illustrations which include numerous photographs of frozen sections. The chapters on the electrocardiogram and on pediatric diagnosis are retained.

Miscellany

TREATMENT OF GENERAL PARALYSIS BY INOCULATION WITH PARASITES OF MALARIA

One hundred and five patients with general paralysis were inoculated subcutaneously (very rarely intravenously) by Warrington Yorke and J. W. S. Macfie with malaria—ninety-eight with simple tertian, six with quartan and one with malignant tertian (*Tr. Royal Soc. Med. & Trop. Hyg.* 18:30 [March-May] 1924). Information is given regarding the incubation period and character of the fever and the mode and result of treatment. During the last twenty months, a strain of *Plasmodium vivax* has been transmitted by direct subcutaneous inoculation through twenty-three passages involving seventy cases. This procedure has apparently not been attended by any change in the parasite. Forty-one patients with general paralysis were infected with *P. vivax* by the bites of infective *Anopheles* mosquitoes. Information is given regarding the incubation period, and the mode and result of treatment. Both *Anopheles maculipennis* and *A. bifurcatus* were used for this purpose and proved equally susceptible to infection with *P. vivax* and equally capable of transmitting the parasite to man. Evidence is adduced which, in the authors' opinion, renders the unicentric hypothesis of the malaria parasites of man untenable. The malaria infections whether induced by inoculation of virulent blood or by the mosquito proved extraordinarily susceptible to treatment: a short course of quinin, 30 grains (2 gm.) for three consecutive days, being sufficient to sterilize the infection in sixty of sixty-one inoculated patients and in twenty-seven of thirty-one mosquito infected patients. These successes are contrasted with the frequent failures obtained in the treatment of simple tertian malaria during the war and in ordinary practice. Various hypotheses that have been advanced to explain the susceptibility of the induced malaria to treatment are considered, and found to be unsatisfactory. Evidence is produced to show that the susceptibility to treatment in the induced malaria is bound up with the fact that in these cases one is concerned with the treatment of primary infections. The mechanism by which a cure is obtained in malaria is considered at length and the conclusion reached that the essential factor for the production of cures is the capacity of the host to produce an immune body in response to antigen formation, resulting from the destruction of a considerable number of parasites by a medicament. If, for any reason, the immune body formation is insufficient the infection is not sterilized and a relapse occurs. The failure of treatment in chronic relapse cases is explicable on the same hypothesis: the parasites in such cases are not quinin resistant but immune body resistant. Observations on the value of quinin prophylaxis showed that administration of the drug before infection is useless, that its administration must be continued for at least ten days after the infecting feed to prevent infection from developing, and that the daily dose given has but little influence apart from the fact that with very large doses (2 gm.) the period for which the drug has to be given to prevent development of infection is a little shortened. It is concluded from these observations that quinin has little if any action on sporozoites, and that the mechanism by which development of infection is prevented is similar to that by which a cure is effected. So far as can be judged at present, the results obtained with the malaria treatment of general paralysis are most satisfactory. Of the eighty-four patients with general paralysis who have been observed for a sufficient time after treatment to warrant any conclusion, twenty-three (27.4 per cent.) have been, or are about to be, discharged as provisionally cured; seventeen (20.2 per cent.) have showed distinct mental and great physical improvement, and many of the remainder have improved physically.

Medicolegal

Must Tender Hospital Services and Medical Treatment

(*Old Ben Coal Corporation v Industrial Commission et al* (Ill)
142 N E R 507)

The Supreme Court of Illinois in affirming a judgment that affirmed an award that included an allowance for hospital services and medical treatment for an injured employee, made under the workmen's compensation act of Illinois, says that the fact that as an emergency the employer had the employee taken to a certain hospital, from which the employee was the next day taken by his family did not, in the absence of tender of competent service of that character after demand, relieve the employer from liability for such service. While the rule is, as often stated by this court, that the employer has a right to prescribe where the medical attention and hospital services shall be procured so long as they are such as are reasonably necessary and adapted to the purpose of treating the injured employee, yet the employer does not because the employee goes to another hospital and thereafter demands medical and hospital services, avoid liability for such services without tendering other services of that character to him. In other words, the employer is not given the right, simply because the employee leaves the hospital to which the employer took him to avoid all liability for hospital and medical treatment without tendering other services of like character, unless the facts show that the employee, by leaving the hospital, elected to secure a physician and hospital at his own expense.

Breaking of Hypodermic Needle in Tonsillectomy

(*Mandelbaum v Weil* (N Y) 203 N Y Supp 289)

The Supreme Court of New York Appellate Division, First Department, in reversing a judgment for \$1,623.10 that was entered in favor of the plaintiff and in holding that the complaint should be dismissed with costs, says that the plaintiff went to the defendant to have her tonsils removed. As she related her experience she sat down on an ordinary stool. She told the defendant that she was a little nervous. He started putting a needle in her throat, and then she was in great pain. Suddenly he took out the tonsils, and she went home. That was around 1 or half past 1. Late that afternoon the defendant went to the plaintiff's house, informed her that the needle had broken off, and must be in her throat, he having looked all over the floor and been unable to find it. He then took her to a roentgenologist and had a roentgenogram taken. At about 6:30 or 7 p m, the defendant took her to another physician, and they tried in vain to remove the needle. That same evening she was taken to a hospital, where ether was administered and an operation performed in an effort to remove the needle. She remained at the hospital five days. The effort to remove the needle was unsuccessful.

The first specification of malpractice, as the case was submitted to the jury was that the defendant should have used a general anesthetic, and not a local one, but that was negatived by several physicians. The plaintiff's expert admitted that in this case it would have been proper to use a local anesthetic, instead of a general one if the patient had not displayed nervousness. The plaintiff stated that she was slightly nervous, but the defendant said she was not. In any event, it was proved that the general practice is to use a local anesthetic, instead of a general one, in removing tonsils from an adult.

The second specification, as the trial court summarized the allegations of negligence for the jury, was that the defendant should have known of the breaking of the needle, and should at once so have informed the plaintiff. The testimony of the defendant was that he not only knew the needle had been broken, but in the exercise of good judgment he believed it proper not to communicate that fact to the plaintiff until she had an opportunity to recuperate through rest and sleep. It was apparent that he did know of the breaking of the needle, for later in the day he went to the plaintiff's house told her about it, and proceeded to locate it and arrange for its

removal. He secured, at his own expense, the services of a well known physician to remove it. He showed his anxiety to do everything possible for his patient and did not spare expense to himself. Malpractice was not shown by the fact that the needle broke, or that part of it remained in the plaintiff's body.

The third specification of negligence, set forth in the charge to the jury, was that the defendant should have extracted or made efforts to extract, the needle, before he removed the tonsils. Immediately on discovering that the needle had broken he did all in his power to locate and extract it. Such efforts having failed, he decided to proceed with the operation in the hope that he might find the needle in the tonsils when they were removed. The fact that he was unable to locate the needle would not justify an abandonment of the operation. The correctness of his judgment was shown by the subsequent developments.

Under the circumstances this court is of the opinion that malpractice was not established.

Evidence of Malpractice in Treatment of Wound, Sepsis and Amputation

(*King v Belmore* (Mass), 142 N E R 911)

The Supreme Judicial Court of Massachusetts says that the plaintiff was injured by being run down by a motorcycle. The defendant found an open wound on the calf of the right leg, dressed it, and on different days attended the plaintiff for a period of ten days. Then the defendant was dismissed and another physician called. About five months after that, the plaintiff's right leg was amputated. There was evidence that the defendant did not place a drain in the wound, that he put a white powder on it, that he never took the plaintiff's temperature, that after the defendant saw the plaintiff for the last time on that same day, about a cup of pus came from the wound under the bandage. On the other hand, on the testimony of the defendant it could have been found that the care and treatment which he administered to the plaintiff were skilful and proper, but the jury was not obliged to believe his testimony, and could have found that the wound was infected, and that pus formed after the accident. It was for the jury to determine whether in the exercise of reasonable skill the defendant should have discovered the condition of the plaintiff, and whether the treatment under the circumstances was skilful or otherwise. It was uncontroverted that the defendant did not learn at any time during his attendance on the plaintiff that pus had formed or that there was a fracture of the fibula as appeared from the undisputed testimony.

Again while the defendant testified that when he first saw the plaintiff at his office the first thing he did after looking at the wound was to cut the plaintiff's trousers and underdrawers from the bottom to the hip with scissors, and that otherwise he would not have been able thoroughly to clean and treat the injury, there was testimony from other witnesses that the trousers were not cut or slit as described by the defendant. If the jury found that the wound was treated without either removing or cutting the trousers it could have found that it was not cleaned at that time so as to avoid infection. It was manifest that on all the evidence the defendant's motion for a directed verdict in his favor could not have been allowed, and that the jury could not properly have been instructed that the plaintiff was not entitled to recover damages. That was a question of fact to be determined on the evidence with reasonable inferences which might be drawn therefrom. It was for the jury to say whether the defendant exercised such skill and care as members of his profession ordinarily would have exercised under corresponding circumstances.

The plaintiff obtained a verdict, but exceptions by the defendant are sustained. Especially is it held that instructions were erroneous and prejudicial to the defendant in which the trial judge told the jury in effect that notwithstanding that it was not claimed that the fracture caused the loss of the leg and medical experts testified that it had nothing to do with sepsis in the leg yet if the jury found from all the evidence that the fracture did cause the loss of

the leg, it would be necessary to consider that treatment, if any, had at any time been given for the fracture, because if there was no treatment given it would be necessary to find that the defendant was negligent in not discovering the fracture.

In substance the jury should have been instructed, as requested by the defendant, that the fact that the plaintiff suffered sepsis and amputation of his leg did not raise a presumption of want of proper care, skill or negligence on the part of the defendant in his treatment of the plaintiff.

There was evidence that the defendant used certain "dust cloths" and strips from sheets furnished him by the plaintiff's mother for bandaging the wound. But there was no evidence to show, and the plaintiff's counsel did not contend at the trial, that such cloths and sheets were unsanitary or improper for such use. The plaintiff and his mother testified that the dust cloths had been washed and were clean. Accordingly, an instruction on that point favorable to the defendant and requested by him, but not set forth or described by the court should have been given in substance.

In dealing with questions calling for expert medical opinion, much must be left to the discretion of the trial court, and his rulings will not be revised unless they are plainly prejudicial to the rights of the excepting party.

City Liable for Injury from Enema Given in Hospital

(City of Shawnee v. Roush (Ola) 275 Pac. R. 554)

The Supreme Court of Oklahoma, in affirming a judgment for \$10,495 in favor of plaintiff Roush holds that a paying patient in a hospital conducted by a municipality may recover damages for injury done her through the negligence of attending nurses administering to her during an operation. The court says that the defendant city maintains and operates a hospital for the care of the sick, accepting some charity patients but all patients able to pay for their care and treatment are charged therefor. The plaintiff entered the hospital at the regular weekly rate. During the period in which she was in the hospital, an operation was performed on her for gallbladder disease and at the conclusion of the operation a nurse employed by the hospital as appeared to be customary, administered an enema to her, but the solution was so hot as to burn the patient severely. The city urged three main defenses. That there was no negligence in the administering of the enema, that if there was any negligence on the part of the nurse, the administering of the enema was done pursuant to the orders of the attending surgeon, and the hospital would not be liable, and lastly, that even if the nurse was negligent in preparing and administering the enema she was acting as the agent of the hospital and that the hospital was not operated for gain or profit, but for governmental and charitable purposes.

The evidence showed that the physicians and surgeons were employed solely for the purposes of performing the operation, that the administering of the enema was an ordinary duty of the employees of the hospital and that it was prepared by the supervisor of the operating room of the hospital and administered by another employee of the hospital as a usual incident to her duties as a nurse and servant of the hospital. These facts served to distinguish any cases and dispose of any argument on the proposition that the negligence was that of a servant of the surgeons rather than of the hospital. The test was whether the nurse was acting in the scope of her employment in the business of her master and employer. The evidence showed that she was so acting.

In support of the contention that the city was exempt from liability on the ground that the hospital was conducted for governmental purposes, i. e. the protection of the public health of its citizens a number of cases were cited, all bearing on the liability of municipalities wherein were involved the operation of police departments, fire departments, boards of health and institutions such as pest houses and detention hospitals, but none of these does this court consider decisive of the proposition that was before it.

This left the question of whether the fact that the hospital was not operated for profit or gain and sometimes accepted charity patients would exempt it from its prima facie

liability from suit. That, this court thinks, was decisively disposed of in the Alabama case of *Tucler v. Mobile Infirmary Association*, 191 Ala. 572, 68 South 4, wherein the court reviews the authorities and logically treats them to the end that it is impossible now to support any claim of exemption on the part of an eleemosynary institution or an institution operated for other than profit or gain, at least as against the claim of a paying patient for negligence. This court completely affirms the Alabama court in its conclusion, leaving the creations of exemptions of this sort to the legislative department of government if it deems them expedient.

Incipient Arteriosclerosis Not Mental Unsoundness— Guardianship Proceedings

(Huffman v. Beamer (Iowa) 197 N. W. R. 476)

The Supreme Court of Iowa in reversing a judgment that sustained a petition in this proceeding for the appointment of a guardian for the defendant on the ground of alleged mental unsoundness says that the utmost that could be said on the record adverse to the mental soundness of the defendant was that she had incipient arteriosclerosis. This is not mental unsoundness within the meaning of the law.

Theoretically, a guardianship proceeding is not adversary. It is supposed to be prosecuted and defended solely in the interest of the defendant. The proceeding bears some analogy to a will contest. In this class of cases, the supreme court scrutinizes the verdict more critically and interferes more readily than in any other class of litigation. The reasons for such scrutiny are even stronger in a guardianship proceeding than in a will contest. The courts cannot fail to observe the natural tendency of selfish interest to abuse this proceeding and to resort to it for wholly selfish purposes. The premature quarrels of expectant heirs are thrust on the natural repose due to old age and often result in despoiling the common benefactor and in destroying his status, and in depriving him of the liberty to do as he will with his own and in compelling him to eat his own substance out of a stranger's hand.

Society Proceedings

COMING MEETINGS

- American Academy of Ophthalmology and Oto-Laryngology Montreal Canada Sept 15-20 Dr. Luther C. Peter 1529 Spruce Street Philadelphia Secretary
- American Association of Obstetricians, Gynecologists and Abdominal Surgeons Cleveland Sept 18-20 Dr. James I. Davis 111 Josephine Avenue Detroit Secretary
- American Association of Railway Surgeons Chicago Oct 15-17 Dr. Louis J. Mitchell 29 East Madison Street Chicago Secretary
- American Child Health Association Kansas City Mo. Oct 15-17 Dr. Philip Van Ingen 125 East 71st Street New York Secretary
- American College of Surgeons New York Oct 20-24 Dr. Franklin H. Martin 40 East Erie Street Chicago Director General
- American Electrotherapeutic Association New York Sept 9-12 Dr. Richard Kovacs 233 E. 68th Street New York Secretary
- American Public Health Association Detroit Oct 20-23 Mr. Homer N. Calver 370 Seventh Avenue New York Secretary
- American Roentgen Ray Society, Boston Sept 3-6 Dr. W. W. Watkins Goodrich Building Phoenix Ariz Secretary
- Colorado State Medical Society Denver Oct 7-9 Dr. F. B. Stephenson Metropolitan Building Denver Secretary
- Delaware State Medical Society Milford Oct 14-15 Dr. W. O. LaMotte Industrial Trust Building Wilmington Secretary
- Indiana State Medical Association Indianapolis Sept 24-26 Dr. Charles N. Combs 221 South 6th Street Terre Haute Secretary
- Kentucky State Medical Association Louisville Sept 23-25 Dr. A. T. McCormack 532 West Main Street Louisville Secretary
- Medical Association of the Southwest Kansas City Mo. Oct 13-18 Dr. F. H. Skinner Rialto Building Kansas City Mo. Secretary
- Michigan State Medical Society, Mount Clemens Sept 9-11 Dr. F. C. Warnshus Powers Theatre Building Grand Rapids Secretary
- Minnesota State Medical Association St. Cloud Oct 8-10 Dr. Carl B. Drake Guardian Life Building St. Paul Secretary
- Missouri Valley Medical Society of the Des Moines Sept 17-19 Dr. Charles W. Fissett 115 E. 31st Street Kansas City Mo. Secretary
- Nevada State Medical Association Reno Sept 12-14 Dr. Claude L. Piersall Masonic Temple Reno Secretary
- North Dakota State Medical Association Bismarck Sept 10-11 Dr. H. J. Powe 5311 Upton Avenue S. Minneapolis Minn. Secretary
- Pennsylvania Medical Society of the State of Reading Oct 6-9 Dr. W. F. Donaldson Jenkins Arcade Pittsburgh Secretary
- Vermont State Medical Society Burlington Oct 9-10 Dr. W. G. Ricker St. Johnsbury Secretary
- Virginia Medical Society of Staunton Oct 14-17 Miss Agnes V. Edwards 104½ West Grace Street Richmond, Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to *THE JOURNAL* for a period of three days. No foreign journals are available prior to 1920 nor domestic prior to 1923. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Gynecology, St. Louis

S 1 130 (July) 1924

- Newer Gynecology B C Hirst Philadelphia—p 1
*Serum Treatment of Puerperal Sepsis H Bailey New York—p 7
Wassermann Test D L Belding and I I Hunter Boston—p 22
Natural Immunity in New Born L K Musselmann New Haven Conn—p 45
Diagnosis of Sterility in Male and Female M Huhner New York—63
Intra Uterine Contraceptive Pessary Inefficient and Dangerous R S Siddall Detroit—p 76
*Gynecologic Plastic Surgery Under Sacral transsacral Anesthesia M O Magid and W Klein New York—p 79
Experimental Attempts to Promote Uterine Growth M R Robinson, New York and B Zondek Berlin Germany—p 83
Factor Controlling Weight of New Born R T LaVake, Minneapolis, Minn—p 99
Urogenital Symptoms in Gynecologic Patients W T Dannreuther New York—p 103
Extensive Carcinoma of Ovaries in Girl of Nineteen R L Dickin son New York—p 118
Case of Krukenberg Tumor O A Gordon Brooklyn—p 120

Serum Treatment of Puerperal Sepsis—In fourteen cases of acute puerperal fever, of which six gave positive intra-uterine cultures of hemolytic streptococcus, the administration of polyvalent antistreptococcus serum was followed in eleven cases by the subsidence of the temperature and gradual recovery, giving a death rate uncorrected, of 214 per cent and corrected of 153 per cent. The administration of the polyvalent antistreptococcus serum, under the conditions outlined appears to Bailey to be comparatively harmless and of considerable value in the treatment of puerperal sepsis.

Sacral-Transsacral Anesthesia—Magid and Klein report a series of cases operated on under sacral-transsacral anesthesia, with the hope of encouraging other surgeons to use this method, that their patients may be spared the discomforts and possible added shock of a general anesthetic. The possibility of lung complications is eliminated. Nausea, vomiting and thirst are absent. The patients are comfortable in every way and may be fed a fairly good meal, several hours after the operation. Another advantage is that liquids may be given to the patients during the course of the operation.

American Review of Tuberculosis, Baltimore

9 389 490 (July) 1924

- *Five Diagnostic Criteria of Pulmonary Tuberculosis in Negative Diagnoses L Brown and F H Heise Trudeau N Y—p 398
*Roentgen Ray in Classification of Suspected and Definite Pulmonary Tuberculosis F H Heise and H L Sampson Trudeau N Y—p 406
*Tuberculosis of Pancreas S L Van Valzah Denver—p 409
*Fatal Hemorrhage into Spleen from Tuberculous Ulcer of Bowel S A Levinson Chicago—p 418
*Perforation of Ileum Due to Tuberculous Ulcer W B Jameson Hamburg Pa—p 423
Case of Pneumoperitoneum Treatments of Tuberculous Enterocolitis with Oxygen R L Lane Pupinsky Minn—p 425
*Prevention and Treatment of Digestive Disorders in Tuberculous Patients J L Kantor New York—p 430
Mercury and Zinc Ions in Surgical Tuberculosis G B Massey Philadelphia—p 440
*Bacteriologic Study of Case of Clinical Tuberculosis in Which Tubercle Bacillus Was Not Found in Sputum M A Smeeton and L F Rettger New Haven Conn—p 443
Sensitization with Non Acid Fast Tubercle Bacilli T A McJunkin St. Louis—p 464
Experimental Tuberculosis of Guinea Pig III Protein Concentration of Blood Serum and Erythrocyte Volume in Tuberculous Guinea Pigs Studies in Biochemistry and Chemotherapy of Tuberculosis XXVII L Bender and L M DeWitt Chicago—p 477
Attempt to Determine Presence of Vitamins A and B in Tubercle Bacilli R L Cunningham, Berkeley Calif—p 487

Diagnostic Criteria of Tuberculosis—Of 203 nontuberculous cases admitted to Trudeau Sanatorium 126 had no recognizable clinical disability. Of the 77 who were found to have

a definite reason for disability, some form of nervous disturbance was found to be the most frequent cause (21 instances). Next in order of frequency were the postinfluenzal debilities (13 cases). Bronchitis of unknown origin occurred twelve times. Thyroid disturbances occurred in 5, syphilis in 4, enteroptosis in 4, malignant tumor of the lung in 2 and in one instance various conditions were found. In 126 cases no definite disability was diagnosed. A large proportion had 'colds' or were run down from lack of physical rest. *Recuperation followed closely on taking such a rest.* From these findings it would seem that too much importance is placed on the toxic symptomatology in diagnosing tuberculosis rather than on the activity of the disease when its presence is assured by other methods. Furthermore, too great an importance is placed on the clinical findings at one examination. It frequently takes time to diagnose pulmonary tuberculosis. It cannot always be done at one examination, and repeated observations and examinations are often necessary. The subcutaneous tuberculin test was given to 214 patients. 82 failed to react to a repeated dose of 10 mg. 132 reacted constitutionally and of these 21 reacted focally as determined by physical signs. Forty per cent of the nontuberculous, 34 per cent of the suspected and 27 per cent of the 'nonclinical' failed to react.

Roentgenologic Classification of Tuberculosis—Although a patient may have had an hemoptysis or a pleuritic effusion or a history of positive sputum of rales and the roentgen ray not show a characteristic tuberculous parenchymatous lesion, the prognosis seems to be quite good since only 17 per cent of 121 such cases examined by Heise and Sampson have died of tuberculosis within four years.

Tuberculosis of Pancreas—Tuberculosis of the pancreas occurred once in more than 200 necropsies on tuberculous subjects at the Fitzsimmons General Hospital Denver. The patient had had a chronic pulmonary tuberculosis affecting all lobes of both lungs. Occasionally he complained of pain in the abdomen, especially on the right side opposite the umbilicus. There was no glycosuria.

Fatal Hemorrhage from Spleen into Bowel—A case of spontaneous fatal hemorrhage from the spleen into the bowel, with a tuberculous ileocolic fistula, is reported by Levinson.

Tuberculous Perforation of Ileum—Jameson's patient had tuberculosis of the right upper lobe and middle lobe and apex of the upper lobe of the left lung and was classed as far advanced. Suddenly he developed a severe general pain in the abdomen with marked tenderness in all its regions and a boardlike rigidity of its wall. The temperature rose to 100 F and slightly above the pulse rose rapidly and was high. The bowels remained closed and on the next day he began to vomit fecal matter. Death occurred twenty-four hours later. The necropsy disclosed a perforation of the wall of the ileum about 6 feet above the ileocecal valve. The opening communicated with an ulcer on the inner surface, and there were a few ulcers in the intestine in this region. No ulcers were seen until almost the ileocecal valve in that region there was slight ulceration. The caecum and the ascending colon showed ulceration extending for about 1 foot none beyond that.

Good Nutrition Prevents Tuberculosis—Kantor urges that malnutrition be treated among the population at large not only for its own sake but as an effective practical measure to diminish the morbidity of tuberculosis. Every tuberculous dyspeptic should be subjected to a comprehensive gastrointestinal survey as early as possible in the course of the disease. The common digestive disorders should be treated promptly not only to aid the recovery from the pulmonary disease but to avoid if possible the secondary localization of the specific infection in the digestive system.

Bacteriologic Study of Tuberculosis—A member of the *Bacillus mesentericus* group appears in the instance reported by Smeeton and Rettger to have been the causal agent of a pseudotuberculosis indistinguishable clinically and roentgenographically from true tuberculosis.

Arkansas Medical Society Journal, Little Rock

21 13 50 (July) 1924

*Laborer Is Worthy of His Hire W T Wootton Hot Springs—p 13

Boston Medical and Surgical Journal

191 141 188 (July 24) 1924

- *Intestinal Obstruction in Children W F Ladd and G D Cutler, Boston—p 141
Mental Hygiene and Pediatrics D A Thom, Boston—p 145
Diagnosis of Endocrine Disorders A W Rowe Boston—p 151
Influence of Internal Secretions on Growth and Function C H Lawrence Boston—p 157
Reduction of Human Blood Sugar by Means of Insulin S H Kahn St Louis—p 161

191 189 238 (July 31) 1924

- Care of Neuropsychiatric Chumants by Veterans Bureau F R Sims Boston—p 189
Ureteral Stricture N P Rathbun Brooklyn—p 197
Progress in Treatment of Syphilis A W Cheever Boston—p 206
Medical Intelligence Bureau for Hot Springs National Park L M Maus Hot Springs Ark—p 215

Intestinal Obstruction in Children—Eighty eight cases of intussusception and seventeen cases of obstruction from other causes are analyzed by Ladd and Cutler. The youngest patient was 3 weeks old, the oldest 8 years and 11 months. Sixty-six patients were under 1 year of age. Two cases of intussusception occurred as a sequel to appendectomy, one before the patient was discharged from the hospital and one, two or three days after his discharge from the hospital. One case occurred during a diarrhea and one followed purpura. In patients in whom the invaginated bowel had not become so swollen and edematous that it could not be reduced the mortality was high but not excessive. In this series there were seventy-two such patients operated on, fourteen of them died and fifty-eight recovered, a mortality of 19.4 per cent. Among the remaining patients on whom resection or enterostomy was performed the mortality was very high. Of nine cases in which resection and lateral anastomosis was performed eight proved fatal. The seventeen cases of obstruction due to causes other than intussusception were as follows: Three were subsequent to intussusception operations. Two occurred as a result of Meckel's diverticulum becoming adherent across the ileum, one child recovered and one died. Three children had obstruction during the first ten days of convalescence following operation for appendicitis with peritonitis. Three cases developed months after appendectomies with drainage recovered by freeing of bands. In one patient from whom an enormous mesenteric cyst had been removed, obstruction resulted from a combination of narrowing the lumen of the bowel and adhesion of the appendix to the site of excision. There was one case of strangulation of a loop of ileum through a defect in the mesentery. In these seventeen cases of obstruction from varied causes, enterostomy was performed six times with five successful outcomes.

Florida Medical Association Journal, St Augustine and Jacksonville

11 1 32 (July) 1924

- Surgery of Stomach J S Horsley Richmond—p 1
Evisceration and Hernia of Diaphragm Three Cases L W Cunningham and W McL Shaw Jacksonville—p 7
Present Status of Deep Roentgen Ray Therapy J C Dickinson, Tampa—p 19
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Boston Medical and Surgical Journal

191 141 188 (July 24) 1924

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 Mental Hygiene and Pediatrics D A Thom Boston—p 145
 Diagnosis of Endocrine Disorders A W Rowe Boston—p 151
 Influence of Internal Secretions on Growth and Function C H Lawrence Boston—p 157
 Reduction of Human Blood Sugar by Means of Insulin S H Kahn, St Louis—p 161

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 Ureteral Stricture N P Rathbun Brooklyn—p 197
 Progress in Treatment of Syphilis A W Cheever Boston—p 206
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Intestinal Obstruction in Children—Eighty eight cases of intussusception and seventeen cases of obstruction from other causes are analyzed by Ladd and Cutler. The youngest patient was 3 weeks old, the oldest 8 years and 11 months. Sixty-six patients were under 1 year of age. Two cases of intussusception occurred as a sequel to appendectomy, one before the patient was discharged from the hospital and one, two or three days after his discharge from the hospital. One case occurred during a diarrhea and one followed purpura. In patients in whom the invaginated bowel had not become so swollen and edematous that it could not be reduced the mortality was high but not excessive. In this series there were seventy-two such patients operated on, fourteen of them died and fifty-eight recovered, a mortality of 19.4 per cent. Among the remaining patients on whom resection or enterostomy was performed the mortality was very high. Of nine cases in which resection and lateral anastomosis was performed eight proved fatal. The seventeen cases of obstruction due to causes other than intussusception were as follows: Three were subsequent to intussusception operations. Two occurred as a result of Meckel's diverticulum becoming adherent across the ileum, one child recovered and one died. Three children had obstruction during the first ten days of convalescence following operation for appendicitis with peritonitis. Three cases developed months after appendectomies with drainage recovered by freeing of bands. In one patient from whom an enormous mesenteric cyst had been removed, obstruction resulted from a combination of narrowing the lumen of the bowel and adhesion of the appendix to the site of excision. There was one case of strangulation of a loop of ileum through a defect in the mesentery. In these seventeen cases of obstruction from varied causes, enterostomy was performed six times with five successful outcomes.

Florida Medical Association Journal, St Augustine and Jacksonville

11 132 (July) 1924

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Action of Quinin on Protein Metabolism—Experiments made by Hardikar lead to the conclusion that quinin in ordinary doses in the normal human subject (12 gm per day) and in doses going up to about 50 gm per kilogram in healthy animals (rabbits and dogs) has no influence on the nitrogen metabolism

Excretion of Tryparsamide—Observations made by Young and Muehlberger show that at least part of tryparsamide is excreted unchanged in the urine. Three out of four persons studied excreted from 88 to 95 per cent of the drug within the first twenty-four hours. Certain subjects show a much slower rate of excretion. These individuals retain the arsenic over a much longer period of time and, therefore, may be more susceptible to cumulative effects of the drug. In such cases it might be advisable to increase the interval between the repeated medication beyond the usual weekly period.

Renal Tolerant of Caffeine—The development of a decreased susceptibility to the diuretic action of caffeine has been shown by Myers to occur in rabbits requiring approximately four months for maximal development with large daily doses. The caffeine tolerant rabbits remain in the best of health, apparently, with this large dose of caffeine over periods of twelve or more months. The renal response of the rabbits exhibiting a maximal tolerance toward caffeine was as sensitive toward minimal effective diuretic doses of sodium acetate as those responses obtained from the kidneys of control rabbits. The urine of rabbits tolerant toward caffeine showed no pathologic constituents during the development of tolerance or during its maintenance at maximal level. Macroscopic and microscopic examination of the kidneys of caffeine tolerant rabbits showed no particular pathology ascribable to the action of caffeine.

Cross Tolerance to Drugs—Myers found that rabbits tolerant toward the action of caffeine exhibit a decreased response toward the diuretic action of theobromin and theophyllin.

Propylene, Methane and Dimethyl Ether—Experiments were made by Brown on propylene, methane and dimethyl ether. Propylene possesses definite anesthetic properties. It will induce anesthesia in concentration as low as 37 per cent using either oxygen or air with it. Anesthesia may be maintained satisfactorily in concentrations varying from 31 to 20 per cent using either oxygen or air. It is slowly poisonous when used in concentrations of about 65 per cent and produces poisonous symptoms in two minutes when used in concentrations of over 70 per cent. It is not unpleasant to inhale. The recovery is quite rapid and there are no unpleasant after effects. It produces no marked effects on the blood pressure when not used in poisonous concentrations. Propylene has been inhaled in the laboratory in concentration of 50 per cent which induces anesthesia in about two minutes. Methane will produce anesthesia but only in high concentrations, 85 per cent would not abolish response to electrical stimulation, 87 per cent apparently gave anesthesia, 90 per cent methane caused irregular respirations which gradually ceased. These figures show that the difference between anesthetic and poisonous doses is very slight. Dimethyl ether produces anesthesia in concentrations of 65 per cent. 85 per cent causes profound anesthesia with gradual cessation of respirations. Approximately twenty minutes were necessary for complete recovery after fifty minutes anesthesia. Dimethyl ether has been inhaled in the laboratory in concentrations up to 50 per cent. It is most unpleasant to take.

Journal of Radiology, Omaha

5 221 260 (July) 1924

- Biophysical and Chemical Properties of Malignant Cell Metabolism. Comparative Therapeutic Measures. D. C. A. Butts. Philadelphia—p. 221.
Treatment of Malignancies by Surgical Diathermy and Roentgen Ray. A. L. Yocom, Jr. Chariton, Iowa—p. 228.
Interpretation of Dental Roentgenographic Shadow Changes. W. A. Lurie. New Orleans—p. 231.
Roentgenologic Diagnosis in Diseases of Alimentary Tract. N. J. Nessa. Sioux Falls, S. D.—p. 232.
Roentgen Ray in Diagnosis. J. M. Willis. McCook, Neb.—p. 235.
Treatment of Pulmonary Tuberculosis by Ultraviolet Ray. W. B. Chapman. Carthage, Mo.—p. 237.

- New Device for Charging Electroscopes and Ionquantimeters. M. Brenzinger. Frankfurt on the Main, Germany—p. 241.
Causes of Failure with Autocondensation in Hypertension. B. L. Knight. Cedar Rapids, Ia.—p. 242.

Laryngoscope, St. Louis

34 497 592 (July) 1924

- Appearance and Behavior of Normal Tympanic Membrane. G. W. Mickenzie. Philadelphia—p. 497.
Otitic Brain Abscess. S. M. Smith. Philadelphia—p. 534.
Roentgenography of Nasal Accessory Sinuses. M. Maltz. New York—p. 550.
Ophthalmic Migraine. G. Sluder. St. Louis—p. 570.

Maine Medical Association Journal, Portland

14 251 272 (July) 1924

- Intraspinal Therapy of Neurosyphilis. R. B. Josselyn. Portland—p. 256.

Northwest Medicine, Seattle

23 305 356 (July) 1924

- State Medical Society. E. B. McDaniel. Portland—p. 305.
Diagnosis and Treatment of Brain Injuries. W. Sharpe. New York—p. 308.
Botulism in Oregon. F. D. Stricker, W. Levin and R. L. Benson. Portland—p. 316.
Surgery Forty Five Years Ago and Now. W. Kuykendall. Eugene, Ore.—p. 324.
Restrospection and Introspection After Forty Years. J. A. Fulton. Astoria, Ore.—p. 328.
Economic Side of Preventive Medicine. C. I. Smith. Portland—p. 330.
Medical Study in Europe. N. W. Jones. Portland—p. 332.

Botulism in Oregon—Stricker, Levin and Benson state that the spores of *Clostridium botulinum* have been found in 31 per cent of the soils examined from Oregon, 80 per cent from Washington and 29 per cent from California. The Albany outbreak which occurred in February, 1924, was one of the largest that has ever occurred in this country. Every person (twelve) who ate at this meal suffered death from the virulent toxin that was present in a jar of string beans. The history of this outbreak from a preventive standpoint emphasizes the fact that a great deal of care must be exercised in canning methods. The soil of the garden in which these beans had been grown was found to contain *C. botulinum*, Type A.

Philippine Journal of Science, Manila

24 369 507 (April) 1924

- Biochemical Study of Resistance to Mildew in *Oenothera*. J. M. Maranon—p. 369.
Chemotherapeutic Experiments with Chaulmoogra and Allied Preparations. III. Disinfecting Power of Vapors of Vegetable Oils Toward Acid Fast Bacteria. O. Schöbl and H. Kusuma—p. 443.
Monilia Psilosis Ashford in Severe Anemia Associated with Sprue Syndrome. L. W. Smith—p. 447.
Hydroids of Philippine Islands. C. W. Hargitt—p. 467.

Disinfecting Power of Vegetable Oils—Having demonstrated the growth-inhibiting effect on acid-fast bacteria of certain vegetable oils, Schöbl and Kusuma attempted to ascertain to what extent if at all, these oils contribute to the natural disinfection of objects exposed to the atmosphere, which is filled with their volatile constituents or secondary products. The vapors of chaulmoogra and Hydnocarpus oils showed no disinfecting effect on acid fast bacteria. The volatile constituents of certain essential oils showed a high disinfecting activity with a strong indication of selectivity toward acid-fast bacteria.

Monilia Anemia Associated with Sprue Syndrome—Eight cases of severe anemia associated with the sprue syndrome are presented by Smith with their laboratory findings. The isolation of *Monilia psilosis* Ashford, 1914 from these cases is described, which is the first time it has been reported from the Philippine Islands. The specific nature of the complement fixation in sprue using a watery extract of *Monilia psilosis* as antigen is discussed. The histopathology of the peripheral blood is described and on the basis of the blood picture a tentative classification of this anemia as aplastic is suggested.

Public Health Journal, Toronto

15 291 340 (July) 1924

- Diphtheria. J. G. Fitzgerald—p. 291.
Problems of Rural Communities. J. J. Middleton—p. 305.
Social Hygiene. G. Bates—p. 310.

Revista Filipina de Medicina y Farmacia, Manila

15 84 112 (April) 1924

Hospital Service in Philippines (1901-1924) S. A. Orosa—p. 85

South Carolina Medical Association Journal, Greenville

20 157 188 (July) 1924

Psychoneuroses E. L. Horger Columbia—p. 159

Gynecologic Contributions to Obstetric Difficulties G. T. Tyler Greenville—p. 162

Surgery in Diabetes Mellitus R. L. Sanders and J. P. Henry—p. 169

Surgery, Gynecology and Obstetrics, Chicago

39 147 258 (Aug.) 1924

*Chyluria Case Treated with Neo-Arsphenamin W. E. Lower and G. W. Belcher Cleveland—p. 147

Hematuria 821 Consecutive Cases D. W. MacKenzie, Montreal—p. 155

Congenital Diverticulum of Common Bile Duct H. W. S. Wright Tsinanfu North China—p. 156

Tuberculous Cyst of Spleen Splenectomy Recovery C. H. Peck New York—p. 162

Infections of Hand J. H. Garlock New York—p. 165

Vascular Tumors of Intestine A. J. Brown Omaha—p. 191

*Preoperative Preparation of Patients with Obstructive Jaundice W. Walters and J. P. Bowler, Rochester Minn.—p. 200

Childbearing After Radium and Roentgen Ray Treatment F. A. Pemberton Boston—p. 207

*Cervical Sympathectomy for Relief of Pain F. J. Smith and R. D. McClure Detroit—p. 210

*Benign Tumors of Placenta R. A. Scott Evanston Ill.—p. 216

Some Problems of Drainage H. M. W. Gray Montreal—p. 221

*Repeated Venesection Blood Transfusion in Anuria C. A. Bowers and H. R. Trattner Cleveland—p. 229

Loose Body in Knee Joint Demonstrated by Pneumarthrosis I. Balen swig New York—p. 235

*Insulin Treatment of Toxic Vomiting of Pregnancy W. Thallmer Milwaukee—p. 237

Wrist Under Chin Cause of Deflection Manual Rotation in Deep Transverse Arrest G. E. Barnes Herkimer N. Y.—p. 240

Neo-Arsphenamin for Chyluria—Lower and Belcher's case of chyluria was of left renal origin. Searches for parasites were negative, in spite of the fact that the patient was Chinese and had an eosinophilia of from 5 to 7 per cent. Posture had no effect on the condition. Diet caused little change. Increasing the fat intake did not increase the fat output. A fat-free diet lowered the output a little. The differential phenolsulphonephthalein test showed a normal left kidney (chyluria side). The pyelogram did not show a pathologic condition. Neo-arsphenamin was directly followed in a few days by complete disappearance of fat, as well as red blood cells from the urine. The patient remained fat-free and showed no hematuria when last seen one and two-thirds months later, although the eosinophilia had persisted.

Hematuria—Of the 821 cases of hematuria analyzed by MacKenzie pyelitis was the cause in 132 cases, kidney tuberculosis in 88 and kidney calculus in 64. Ureteral calculus in 87, cystitis in 38, vesical calculus in 38, tumor of bladder in 87, chronic inflammation of prostate with tuberculosis in 39, prostatism in 54. In 60 cases the blood came from the urethra. Excluding the urethra, 536 cases out of 761, that is over 70 per cent were caused by calculi, tuberculosis, cancer or surgical lesions of the kidney. The great importance of subjecting these patients to a careful and thorough examination is emphasized.

Tuberculous Cyst of Spleen—Peck's case apparently was one of primary tuberculosis of the spleen. No evidence of tuberculosis could be found elsewhere in the body. The spleen was removed. Its dimensions were 29 by 18½ by 15 cm. Its weight was 3,270 gm (16 pounds 13 ounces) after the loss of the semifluid content of the upper locule of the cyst. Only three cases of equal or larger size have been reported, all being necropsy not operative cases.

Vascular Tumors of Intestine—Brown has found recorded in the literature nineteen cases of vascular tumor of the intestinal tract below the stomach. These include all forms of vascular tumor varying from capillary nevus to cavernous angioma. Brief abstracts of the cases are given. He adds one case. The patient was a girl aged 12. From the examinations and findings a diagnosis of either fulminating appendicitis or intestinal obstruction was made and immediate operation advised. Lying deep in the pelvis was a tumor

that felt like a bag of worms. It was found to be in the jejunum. Eight inches of bowel containing the tumor was resected and an end-to-end anastomosis performed. Following operation acute gastric dilatation supervened, vomiting continued and death occurred two days later. A necropsy was refused. The tumor was 5 inches in length, annular in form and involved the entire circumference of the intestine. The dilated blood spaces of which the tumor was composed were raised from the surface of the bowel and were of a dusky violet color. The margins were rather sharply demarcated and raised above the surface. The finger introduced into the lumen of the bowel met a constriction which would not admit the tip of the finger and the intestine above this constriction contained almost entirely undigested food. When the bowel was split longitudinally the constriction was found to be due to a collection of fibrous tissue around the dilated sinuses at the thickest portion of the tumor. On section the tumor consisted of irregular sinuses lined with endothelial cells and containing large numbers of red blood cells. Histologically the tumor was a cavernous hemangioma.

Preoperative Preparation of Jaundice Patients—An experimental study was made by Walters and Bowler of the toxicity of calcium chlorid used in the preparation of patients. They found that calcium chlorid, following its intravenous injection in a 10 per cent aqueous solution is rapidly eliminated from the blood stream and shows no tendency to accumulate in the blood. Following therapeutic doses, as used in these experiments the blood calcium content returns to its normal level within two hours. The lethal dose of calcium chlorid administered intravenously in 10 per cent aqueous solution at a uniform rate of 1 cc per minute was 2564 mg for each kilogram of body weight in normal dogs and in jaundiced dogs, 3866 mg for each kilogram of body weight. Following continued injections of calcium chlorid, including therapeutic doses in normal and jaundiced dogs no evidence of toxic effect on the kidney could be demonstrated clinically or microscopically. The cardiac effect of therapeutic doses of calcium chlorid as used in this study is the production of various alterations in pulse rate. Toxic doses cause disturbances of conduction, ectopic origins of impulse and when carried to the point of greater toxicity ventricular fibrillation which is followed by the death of the animal.

Pregnancy After Irradiation—Pemberton is of the opinion that a woman can be treated with radium or roentgen ray and bear normal children subsequently.

Cervical Sympathectomy for Angina Pectoris—Smith and McClure report two cases in which a cervical sympathectomy was done for angina pectoris. In one of the cases the operation was done on both sides. Both patients had considerable relief from pain after the operation as to the number and severity of the attacks. The authors stress the fact that while in many cases the resection of the cervical sympathetic in angina pectoris unilateral or bilateral, may greatly lessen the number and minimize the intensity of the painful attacks it must not be counted on to secure complete relief from pain unless the first thoracic ganglion is included in the resection. The resection should be done first on the side which has shown the greatest or most severe radiation of pain and followed later by a similar operation on the other side, if complete relief is not obtained after the first one.

Benign Tumors of Placenta—Scott reviews the literature and reports one case of chorio-angioma of the placenta. The pregnancy and labor were wholly normal.

Venesection Blood Transfusion in Anuria—Bowers and Trattner report the use of an additional surgical method, the combination of repeated venesections and transfusion in a case of acute nephritis with anuria. In addition to decapsulation of the right kidney (which was unsuccessful in producing any immediate beneficial effects) the patient was bled 500 cc and was then immediately transfused with an equivalent amount of blood from a healthy donor. The criteria that determined the frequency of this procedure were based on the clinical condition of the patient, the blood chemistry findings and the amount of urine excreted in twenty-four hours. It was found necessary to use four venesection transfusions.

Pneumarthrosis Aid in Diagnosis—Injecting oxygen into the knee joint was a distinct aid in both localizing and differentiating the loose body from the surrounding tissues in the case cited by Balensweig

Insulin in Toxic Vomiting of Pregnancy—Eight patients with pernicious vomiting of pregnancy have been successfully treated by Thalhimer with insulin combined with the intravenous administration of glucose. Five of these cases have been reported previously. The report of the three additional cases is published here. All of these patients showed a marked ketonuria and one of them was proved to have a moderately severe acidosis as indicated by a carbon dioxide combining power of the blood plasma of 35. Three hours later at the end of the intravenous infusion of glucose and the administration of insulin, the blood plasma carbon dioxide combining power was 48, and nineteen hours later it was 69. The rapid eradication of ketonuria, and even of acidosis, by combined insulin and glucose therapy seems to cause relief of the nausea and vomiting in nondiabetic patients. A vicious cycle of acidosis causing vomiting, and the starvation following the vomiting causing further acidosis of a starvation type, seems to establish itself in these patients. Insulin helps break this cycle by forcing the body to oxidize the administered glucose which in turn causes the burning of the products of incomplete fat metabolism (acetone, aceto-acetic acid, beta-oxibutyric acid). This reduces or eliminates the ketonuria, the lowered blood plasma carbon dioxide combining power is raised, and this removal of the acidosis eradicates the chief cause of the severe nausea and vomiting. Food is then retained, and with a proper diet, rich in carbohydrates, nausea and vomiting (except to a slight degree in the morning) usually do not return.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Anaesthesia, Manchester

1 101 148 (Jan.) 1924

- John Snow and Advent of Chloroform D W Buxton —p 101
Experiments with Hydrocarbon Gases J T Gwathmey —p 108
Endotracheal Administration of Nitrous Oxid Oxygen Ethanesal C L Hewer —p 113
Advantages of Warm Ether Vapor F E Shipway —p 123

2 152 (July) 1924

- Joseph Lister and Paul Bert Dosimetric Method of Administering Chloroform D W Buxton —p 1
Anesthesia at Mayo Clinic W R Meeker and M Hines —p 13
Blood Concentration and Body Temperature in Anesthesia W Bourne —p 36

British Medical Journal, London

2 140 (July 5) 1924

- Essential Signs of Arteriosclerotic Disease G Evans —p 1
Medical Practice W J Tyson —p 4
Use of Lipiodol in Diagnosis of Bronchiectasis P F Armand Delille and Alan Moncrieff —p 7
Effect of Boron on Plant Growth W E Brenchley —p 9
Blinded Soldier Learning to See R H Elliot —p 10
*Influence of Sunlight on Bactericidal Power of Human Blood L Colebrook —p 11
Postanesthetic Vomiting Prevention E H P Cave and H C Edwards —p 11
Spasmodic Asthma from Feathers S D Kislner —p 12
Gallstone Enteroliths A A M Nicol —p 12
Diabetic Gangrene Treated by Insulin W H DuPre —p 12
Myoclonic Encephalitis Treated by Patient's Spinal Fluid S E Denyer —p 13
Stabwound of Heart Suture Recovery J T Blackburn —p 13

Use of Lipiodol in Roentgen-Ray Diagnosis of Bronchiectasis—By injecting lipiodol into the bronchi before employing the roentgen rays a clear picture of the bronchi is obtained, bronchial dilatation of even slight degree is definitely shown, and localization of vague shadows becomes very much simplified. Lipiodol a vegetable oil containing 40 per cent by weight of iodine, was first introduced into radiology by Sicard for the localization of tumors of the spinal cord, and Forestier who suggested that it might be used for the diagnosis of bronchopulmonary affections. It was later employed for this purpose in adults by Sergent and Cottenot. Lipiodol

has been used extensively by Armand-Delille and Moncrieff in the case of children clinically supposed to be suffering from pulmonary tuberculosis in whom the diagnosis was not confirmed by other means. Cases of frank tuberculosis should not be submitted to this method, for the congestive action of the iodine may produce harmful effects, and even in doubtful cases an ordinary radiograph may clearly indicate a diagnosis. The lipiodol is injected into the trachea through the cricothyroid membrane under local anesthesia. Special tubes and syringes are used. About 10 c.c. is needed to inject the bronchi of a child, aged from 7 to 10 years. The roentgenogram is taken immediately after the injection is made. Details of the method are given fully.

Influence of Sunlight on Bactericidal Power of Blood—Observations made by Colebrook have shown that leukocytes which are functioning badly are easily harmed by the action of light on the skin, while those which are functioning well are tolerant of large doses and respond to them by displaying a still greater activity.

Prevention of Postanesthetic Vomiting—Cave and Edwards attempted to eliminate the nausea and vomiting which so frequently follow operations under general anesthesia by the administration of some pleasantly flavored substance during the final stages of the operation. The substances used were oils of cloves, peppermint and lavender, all of which have a high molecular weight and are absorbed but little. Acetic acid was also tried in some cases after ether, the interaction of the two producing the sweet smelling ethyl acetate. The methods of administration were either inhalation through an open mask or swabbing out the mouth with a few drops on a sponge. No claims are made in favor of the method. The cases of severe nausea and vomiting seemed to be reduced when acetic acid and oil of cloves were used, but the number of cases is too small to draw definite conclusions.

China Medical Journal, Shanghai

38 437 532 (June) 1924

- Spleen and Blood Cells R H Mole —p 452
Occurrence of *Tenia Solium* and *Cysticercus Cellulosae* in North China R G Mill —p 465
Congenital Hypertrophic Pyloric Stenosis E D Smith —p 471
Leukocytosis of Puerperium Among Chinese J P Maxwell and M Yang —p 477
*Intermediate Host of *Schistosoma Japonicum* III Distribution H E Melenev —p 481
*Congenital Abnormality Report of Case E K Simpson —p 486
Case of Pseudohermaphroditism A W Hooker —p 487

Cysticercus in Pectoral Muscle—Mills reports a case of *Cysticercus cellulosae* infestation in the right pectoralis major muscle of a man. The life span of the larval stage in this case of human infestation was at least twelve years.

Intermediate Host of Schistosomiasis—Investigation of various localities in the central Yangtze Valley has revealed the presence of *Oncomelania hupensis* on the shore of Tung Ting Lake in the region of Hankow, at Anking and at Pukow. It was nearly everywhere closely associated with clinical cases of schistosomiasis. Each locality was found to have epidemiologic features of its own. Melenev states that the seed bed in which rice is sown is often the place where the farmers acquire schistosomiasis and may be the most important source of infection in this occupation. Comment is made on the variation in size and density of the shell of the intermediate host of *Schistosoma japonicum* from one end of its Asiatic habitat to the other. Those from the upper part of the Yangtze Valley have the largest and hardest shell, while those from Japan are smaller and have the softest shell. There is a progressive gradation in specimens from intermediate localities.

Parasitic Monster—The sexual organs and anus of the child reported on by Simpson were normally placed and he was apparently normal in every way except for the supernumerary development of an acephalous upper part of a trunk with a pair of hands. The boy could stand and pick up things from the ground with his supernumerary hand and pass them to his normal hand without bending his spine. He came for treatment of a cold abscess which pointed where the second head should have been. The abscess was opened under local anesthesia and 20 ounces of pus removed.

Edinburgh Medical Journal

71 341 372 (June) 1924

- *Scarlatinal Arthritis A Joe—p 341
- Attitude of Medical Profession to Scientific Problems H T Thomson—p 350
- Acute Osteomyelitis of Spine K P Brown—p 360

Scarlatinal Arthritis—Forty-nine personal cases and the records of 24,012 hospital cases of scarlet fever were analyzed by Joe with reference to the occurrence of scarlatinal arthritis. The percentage incidence was 3.76 per cent. The liability to contract scarlatinal arthritis increases with age in both sexes. An interesting point is that out of 777 children of both sexes developing scarlet fever before the end of their second year not one showed arthritis. With regard to the commonest time of appearance of the complication, no case appeared before the second day of the fever and a small percentage on the second and third days. The seventh and sixth days were the favorite days for the appearance of scarlatinal arthritis, 14.1 per cent and 14 per cent of the total number occurring on these days. Next in frequency were the fifth day with 10.7 per cent, the eighth with 8.08 per cent, the ninth with 8.01 per cent, and the fourth with 7.4 per cent. From the fourth to the ninth day, inclusive, therefore, 62.29 per cent of all cases occurred. About one patient in 250 might be expected to develop arthritis after the fourth week. An attempt was made to find out if there was any connection between the incidence of any other complication or group of complications of scarlet fever and arthritis by comparing two series of 408 cases, all of one series showing arthritis, and none of the other showing arthritis. The first point noted was that 63.2 per cent of the arthritis cases showed arthritis as the sole complication. The only concomitant complications promising a relationship with arthritis were adenitis, rhinitis and otorrhea. Adenitis either alone or in conjunction with other complications, except arthritis, was present in 18.06 per cent of the series. In the presence of arthritis, however, it appears in 27.2 per cent of cases of scarlet fever. Endocarditis, pericarditis, or both occurred sixty-one times in 24,012 cases, and of these sixty-one cases, twenty-six were associated with arthritis. The septic type of scarlatina shows an incidence of arthritis of 8.54 per cent. In 207 cases of relapsed scarlet fever arthritis occurred in 4.35 per cent of cases.

Glasgow Medical Journal

101 325 384 (June) 1924

- Treatment of Syphilis W R Snodgrass—p 325
- Present Position of Anesthesia H P Fairlie—p 339
- *Stone in Urethra for Twenty Three Years W W Galbraith—p 344
- *Case of Ulcerative Endocarditis Terminating in Appearance of Wide spread Embolic Phenomena A M Crawford—p 346

Urethral Calculus—In Galbraith's case a calculus measuring $1\frac{1}{4}$ inch long and $\frac{3}{4}$ inch wide was embedded in the navicular fossa, with its tip projecting through the external urethral meatus for twenty-three years without causing any real inconvenience. It was eventually passed spontaneously.

Ulcerative Endocarditis with Extensive Embolism—Loss of power in the right arm and leg of four days duration brought Crawford's patient to the hospital. For several days before admission he had complained of vague pains in the limbs and of weakness in the legs. Four days before he suddenly fell down unconscious. He remained in a semiconscious condition, with right sided paralysis and complete incontinence of urine and feces. A diagnosis was made of mitral stenosis with left sided cerebral embolism producing aphasia and right hemiplegia. His condition improved for a while, then, after three months, he suddenly became very ill, with signs of gangrene apparent in the legs, the tip of the nose, the alae nasi and both cheeks over the malar bones. A patch of ecchymosis appeared over the left buttock, and purpuric spots were visible over the left upper arm and vertex of the skull. The affected parts generally were cold and pulseless. Some tenderness was noted over the left popliteal region. Death was preceded by a condition of semistupor with mild delirium and some extension of the gangrenous areas. The necropsy revealed a widespread endocarditis affecting the aortic and mitral valves. There was a small hemorrhagic infarction in the left lung. The spleen was normal in size but showed a large number of small infarctions

and three large infarctions. Both kidneys showed one or two small infarctions. The brain showed a softening of some duration involving the anterior and upper end of the caudate nucleus, extending outward to the island of Reil and inward to the anterior knee of the internal capsule. An embolus was found blocking the right radial artery at its commencement. The subcutaneous tissue over both cheeks was extensively infiltrated with blood. The right leg was gangrenous from the knee downward, and the left knee and foot also showed gangrenous changes.

Indian Medical Gazette, Calcutta

59 273 324 (June) 1924

- Antimalaria Measures in United Provinces J A S Phillips—p 273
- Individual Susceptibility H W Acton and R N Chopra—p 278
- Effect of Enteric Vaccine on Endemic Goiter in Children M A Nicholson—p 289
- Transient Infections with Leishmania Donovanii R Knowles and B M D Gupta—p 292
- Injuries from Firearms at Short Range C Newcomb—p 293
- *Intestinal Coleoptera T B Fletcher—p 296
- Is Leprosy Curable? E Muir—p 297

Beetles in Intestine—The occurrence of a pathologic condition associated with the presence of living beetles in the human intestine has attracted the attention of several observers of late years, both in Bengal and in the low country of Ceylon. Cases occur principally in children of both sexes between the ages of three and five years with symptoms pointing to an obscure form of diarrhea sometimes associated with griping and emaciation. The living beetles may be passed out naturally with the stools, but in several cases they have been passed out under medical observation following a rectal injection. These beetles so far as they have been observed hitherto are all small species of the true dung-beetles belonging to the subfamily Coprinae of the family Scarabaeidae. Those definitely noted are *Onthophagus bifasciatus*, another undetermined species of *Onthophagus* and *Caccobius mutans*. All of these beetles, with the other species of the large group of Coprinae, feed normally on dead animal matter and especially on animal excrement. The beetles implicated in cases of human infection being of common occurrence in human excrement after it has been evacuated, it still remains to be shown how the beetles can obtain access into the human intestines. It seems most probable to Fletcher that the adult beetles guided by their keen sense of smell in the search for human ordure, themselves effect an entrance through the anus when this part of the body is exposed unprotected by clothing, during sleep in warm weather and is probably soiled to some extent, especially in the case of young children who have not yet learned cleanly habits.

Indian Medical Record, Calcutta

43 161 192 (June) 1924

- Case of Raynaud's Disease S L Sarkar and S N Maitra—p 161
- Medico-legal Responsibilities in Cases of Poisoning T P Chatterji—p 163
- Protein Sensitization and Desensitization A Ray—p 166
- Minor Endocrine Glands S K Mukherji—p 175

Japan Medical World, Tokyo

4 111 134 (May) 1924

- *Serologic Studies of Experimental Protozoan Disease K Taoka—p 111
- *Roentgen Rays on Liver or Spleen to Stop Hemorrhage T Shichida—p 115
- Growth of Oxyuris Vermicularis S Hiraishi—p 118

4 117 147 (June 15) 1924

- Biologic Function of Constituents of Dead Cells Y Miyagawa—p 117
- Typical Korean Diets J D Vanbuskirk—p 127

Serologic Studies of Protozoan Disease—Taoka claims to have found that an unknown substance is formed in trypanosomiasis and two substances in rat bite fever probably due to the protozoan cause.

Roentgen Rays Over Liver to Prevent Hemorrhage—Experimental evidence is submitted by Shichida to prove that the application of roentgen rays over the liver is one of the best methods to stop bleeding. He suggests that before operating on a patient with a hemorrhagic diathesis, the roentgen ray be applied over the liver for five or ten hours to avoid bleeding during and after the operation.

Journal of Tropical Medicine and Hygiene, London

27 187 198 (July 1) 1924

Malaria Work in Buzuluk Oozed E M Christie—p 187
Therapeutic Ventilation J R Quain—p 190**Lancet, London**

2 53 100 (July 12) 1924

*Diagnosis of Diphtheria F F Caiger and R A O'Brien—p 53
Oxidized Cod Liver Oil in Therapy of Rickets R Wagner and H
Wimberger—p 55
Flocculation Methods of Dreyer Ward and Sachs Georgi I R Morch
—p 58
Prophylactic Method of Treatment of Eclampsia B B Stroganoff
—p 62
Anesthesia for Short Operations on Children O S Thompson—p 63
Epidemic Pleurisy B Williamson—p 64
Rupture of Rectus Abdominis from Vomiting J Whittingdale—p 65
Growth of Mammalian Tissues in Pure Serum T Lumsden—p 65

Diagnosis of Diphtheria—An investigation was made by Caiger and O'Brien to see if laboratory methods applied as thoroughly as possible to every case admitted with a diagnosis of diphtheria into an infectious fever hospital, would be helpful. In other words would the extra time and trouble involved in such work give any real help in the interests of the patient and in the interests of hospital administration. The laboratory workers diagnosis agreed with the clinical diagnosis in 97.5 per cent of instances, in eleven cases (2.5 per cent) the laboratory evidence was directly against a diagnosis of diphtheria, while the clinical evidence was quite definitely in favor. The first swab examination at the laboratory was found to be positive in 95.5 per cent of instances in which the diagnosis of diphtheria was confirmed. From 93.5 per cent virulent diphtheria organisms were isolated. In only 1.15 per cent was a negative diagnosis which had been made from the first swab changed into a positive diagnosis by the examination of later swabs. Two cases only were diagnosed as "nasal diphtheria" but from neither was *Bacillus diphtheriae* isolated.

Oxidized Cod Liver Oil in Rickets—Four cases of active rickets in infants aged from 5 to 12 months were treated by Wagner and Wimberger with oxidized cod liver oil (heated for twenty-four hours at 120 C with air bubbled through). The daily dose was 10 gm and the cases carefully controlled with regular roentgen ray examination, showed satisfactory healing of the bone lesions at a rate rather slower than with the same dose of a potent, crude, untreated cod liver oil. The growth-promoting potency of the two samples of oil tested by growth experiments on rats was found to be in the ratio of about 1:20. Assuming that a daily dose of 10 gm untreated cod liver oil when used in therapy of rickets, does not provide any great excess of antirachitic principle these observations lend support to the view that cod liver oil contains two active organic factors (1) antirachitic or calcium depositing, and (2) growth promoting (vitamin A), and that the latter is the more sensitive to oxidation at a high temperature.

Ethyl Chlorid Anesthesia for Children—In a series of 10,000 administrations of ethyl chlorid no bad effects were noticed. On the strength of this, Thompson used ethyl chlorid followed by open ether in a series of 200 cases in the outpatient department without observing any ill effects or alarming symptoms or having any difficulty in the administration. He gives ethyl chlorid on an open mask, the amount used being about 3 cc for a child of 5 years. It is sprayed on the mask, which is immediately applied over the face and is followed by open ether later on. The child is instructed to blow it away, and four 'blows' with the inspirations that accompany them are usually sufficient to produce loss of consciousness. The child seldom struggles.

Medical Journal of Australia, Sydney

1 555 580 (June 7) 1924

Internal and External Migration of Ovum H H Schlink—p 555
Chronic Diseases of Cervix Uteri H H Schlink—p 560
Cause of Hysteria C A Hogg and E T Hilliard—p 567**SUPPLEMENT**Martyrdom of Nose R H Pullene—p 385
Suppurative Disease of Mastoid Antrum S A Ewing—p 386Mastoid Drainage in Otitis Media B Foster—p 388
Evolution of Language Mechanism S V Sewell—p 390
Diagnosis in Lethargic Encephalitis D W C Jones—p 392
Relation of Cerebral Structure and Function to Feeble-mindedness
R J A Berry—p 393
Prevention of Mental Deficiency R Noble—p 400
Care of Feeble-minded in Great Britain J Macpherson—p 403
Prevention of Feeble-mindedness M H Downey—p 405

1 607 628 (June 21) 1924

Radium Therapeutics C E Dennis—p 607
Radium Emanation H Flecker—p 610
Radium Therapy R R Wettenhall—p 612
Pellagra Case C E Corlette—p 613**SUPPLEMENT**Vertigo A E Mills—p 433
Psychology of Criminal P C Dane—p 437
Relationship Between Psychologic Processes and Physiologic Reflex
Mechanisms H F Maudsley—p 440
Psychiatric Clinic M Gamble—p 443
Stammering and Influence on Education T G Leary—p 445
Psychotherapy in Practice J W Springthorpe—p 448
Muscle Pressure Sense in Neurologic Diagnosis D W C Jones—
p 451
Twelve Cases of Insanity in Australian Aborigines C A Hogg—p 455

Internal and External Migration of Ovum—Schlink points out the great necessity for gynecologists to recognize the importance of removing the entire intramural or muscular section of the fallopian tubes when performing salpingectomy. This, he says, must be done if they desire to avoid not only the occurrence of serious cases of ectopic gestation as instanced in three cases cited, but also to prevent the development of interstitial abscesses in any subsequent infective process that might arise.

Chronic Infection of Cervix Uteri—It is Schlink's practice when performing subtotal hysterectomy for fibroid growths, uterine fibrosis or gross inflammatory disease of the appendages, to remove the endocervical lining of the cervix from above in order to eliminate postoperative discharge, as the cervix is nearly always infected in such conditions, and to do away with the possibility of subsequent reinfection or cancer. He has devised a special enucleator for this purpose.

Medical Journal of South Africa, Johannesburg

10 305 346 (May) 1924

Streptococcus Group and Rheumatism J Pratt Johnson—p 317
*Effects of Altitude on Health and Longevity J Schneider—p 321
Law and the Doctor in South Africa H De Villiers—p 332

Effects of Altitude on Health—The established facts which Schneider has gathered in the course of investigating the different aspects of the effects of altitude (about 4,000 feet, and over under South African conditions) on health and longevity are these. The atmosphere at these high altitudes is more rarified, drier, colder and possesses higher cooling powers. The effects on an individual who arrives from a low altitude are to produce certain physiologic processes which, in some instances, border on the pathologic. The chief effects are an increase in the number of the erythrocytes per cubic millimeter of blood, and a total increase in the volume of the blood, an increase in the quantity of the hemoglobin contained in each cell deeper and after a time, slower breathing, an increase in the size of the chest wall, a decrease in the tension of the carbon dioxide in the blood, a lowering of the blood pressure, which is however chiefly of a temporary nature and due to a temporary diminution of the blood volume, and vasomotor and other influences.

Ser-I-Kwai Medical Journal, Tokyo, Japan

43 1 14 (June) 1924

Combination of Primary Lung Tumors and Fetal Atelectasis K
Nakasono—p 1
Blood Changes in Mice from Carcinoma Transplantation K Oba—
p 11
Glycogen in Central Nervous System of Chick Embryo C Koyanagi
—p 13**South African Medical Record, Cape Town**

22 247 270 (June 14) 1924

Ureteral Catheterization and Pyelography in Surgical Diseases of Kidney
E B Fuller—p 247
Osteochondritis Deformans O J Currie—p 251
Differential Diagnosis of Typhoid and Typhus Fevers—p 254

Archives des Maladies du Cœur, Paris

17 321 400 (June) 1924

- *Lymphosarcoma with Leukemia S I De Jong and Louet —p 321
Digitalis F Bordet and J Yancoel —p 335
A Case of Flutter 1 L Gallavardin et al —p 342
Congenital Aortic Stenosis F Bezanson and R Azoulay —p 345
Present Status of Surgical Treatment of Angina Pectoris J Heitz —p 350

Coexistence of Lymphosarcoma and Leukemia—De Jong and Louet report a case, with four illustrations, of a latent lymphosarcoma in the mediastinum coinciding with acute leukemia. They refer to Peyton Rous' infectious and transmissible sarcoma in fowls and to Ellermann's experiments in transmission of leukosis, which is similar to acute leukemia in man. "Further researches may establish a connection between leukemia and sarcoma."

Bulletin de l'Academie de Medecine, Paris

92 819 874 (July 8) 1924

- *Tests of Tryparsamide G Guillain and L Giroi —p 850
Curable War Blindness Bonnefont —p 862
Modifications of Blood Pressure in Respiration Moukhtar —p 864
Estimation of Surface Area of Body B Roussy —p 866
Appendicitic Origin of Biliary Infection Caplesco —p 869

Therapeutic Study of Tryparsamide—Guillain and Giroi relate that their experiences in three cases of general paralysis, one of neurosyphilis and one of disseminated sclerosis do not justify the assumption that tryparsamide represents definite progress in the treatment of neurosyphilis. It did not display any more penetrating action than neo-arsphenamin, but the injections were painless and always free from untoward by-effects. The Wassermann reaction in the cerebrospinal fluid was not modified, and the benzoïn reaction only slightly.

92 875 916 (July 15) 1924

- Glycolytic Insufficiency and Insulin C Achard —p 880
*Landry's Paralysis Postpartum G Marinresco —p 900
Tuberculosis in Infants P Nobecourt and G Boulanger Pilet —p 906
*Intracardiac Transfusion K Djenab and Mouchet —p 910
Intratracheal Temperature in Man Collet —p 912

Landry's Paralysis Postpartum—Marinresco observed a case of acute ascending spinal paralysis occurring after delivery. Repeated inoculations of rabbits with the cerebrospinal fluid and cultures were all negative. He believes that the disease was caused by an invisible microbe, an ultravirus. The patient recovered.

Intracardiac Transfusion of Blood—Djenab and Mouchet's experiments on dogs did not prove any advantage from transfusion of blood into the heart in case of grave hemorrhage with collapse.

Bulletins de la Societe Medicale des Hôpitaux, Paris

48 941 1004 (June 27) 1924

- *Cholesterol in Pleuritic Effusion A Coton et al —p 943
*Diphtheria with Typhoid Syndrome Cathala and Giroire —p 948
*Ventriculography After Intraspinal Insufflation Cestan and Riser —p 953
Participation of Skeleton in Hodgkin's Disease Beclere —p 961
Autodesensitization in Hemoglobinuria A Riccardi —p 966
Insulin in Diabetic Coma with Tuberculosis F Rathery and Dreyfus See —p 973
Cure of Paraplegia by Removal of Psammoma Faure Beaulieu and T De Martel —p 979
Semeiologic Import of Nonsurgical Drainage of Biliary Tract M Chiray and M Miloshevitch —p 989
Apparatus for Pneumothorax Baillet —p 1001

Cholesterol in Pleuritic Effusion—Coton Fiessinger and Meignant report two cases of pleurisy in which the effusion contained 36 and 325 per thousand cholesterol. They claim that only eleven similar cases have been recorded to date. As the cholesterol blood content was normal, it may be assumed that the cholesterol was of local origin.

Diphtheria Syndrome Simulating Typhoid—Cathala and Giroire, referring to a personal case point out the difficulty of diagnosis when the diphtheria bacillus is localized exclusively in the tonsils and the clinical features are deceptively similar to typhoid fever.

48 1005 1090 (July 4) 1924

- Negative Serologic Tests in Subjects Resistant to Arsphenamin L Lortat Jacob and J Roberti —p 1006

- Uremia in Mercuric Chlorid Nephritis Lemierre and Bernard —p 1008
*Apyretic Action of Azotemia Idem —p 1018
*Cerebral Hemorrhage Preceding Typhoid Fever Apert and Garcin —p 1025
Test Glycuronuria in Liver Disease G Parturier —p 1028
Anatoxin Reaction in Diphtheric Allergy C Zoeller —p 1032
Abnormally Brief Bleeding Time P Emile Weil —p 1038
Variation in Bilirubin in Duodenal Contents M Chiray et al —p 1040
Rheumatoid Purpura as Form of Serum Sickness V de Lavergne and R Bize —p 1059
Symmetric Lipomatosis P Menetrier et al —p 1064
Congenital Leontiasis Ossea E Apert and R Garcin —p 1072
Incysted Pneumothorax Versus Cavity in Lung E Sergeant and F Bordet —p 1076
Multiple Localization of Lipomatosis Pasteur Vallery Radot et al —p 1083
Portable Apparatus for Pneumothorax V Kouchner —p 1086

Apyretic Action of Azotemia—Lemierre and Bernard referring to a patient with typhoid fever and nephritis suggest the paradoxical idea that the deficient functioning of the kidneys had been of some utility, as the retention of nitrogen in the blood had exerted a depressing action on the fever.

Cerebral Hemorrhage Preceding Typhoid Fever—Apert and Garcin report a case in which cerebral hemorrhage occurred eight days before the clinical symptoms of typhoid fever. The hemorrhage is explained by congestion of the meninges from the toxic action of the typhoid bacilli during the period of incubation.

Comptes Rendus de la Societe de Biologie, Paris

91 325 420 (July 11) 1924 Partial Index

- *Flora of Appendix G M Duthe —p 327
Tuberculin Tests in Lupus L Bethoux —p 329
Cause of Koch's Phenomenon A Boquet and L Negre —p 335
Experimental Vaccination Against Staphylococci A Urbain —p 341
*Radiosensitivity in Isolated Gland J Jolly —p 351
*Lung Fats in Fixation of Calcium H Roger et al —p 357
Action of Calcium on Heart and Kidneys L Brull —p 371
Ferments in Blood Platelets J Roskam —p 373
*Action of Vagus on Blood Pressure Zunz and Govaerts —p 389
Action of Insulin on Coagulation J La Barre —p 393
The Tamponing Mechanism of Calcium Ions Kugelmass —p 397
Surface Tension in Biology W Kopaczewski —p 402
Kidney Functioning in Experimental Nephritis J Frandsen —p 416
Production of Insulin Outside the Pancreas E Lundberg —p 418

Fallax Bacillus in Appendicitis—Duthie found *Bacillus fallax* in an acute gangrenous appendicitis (three cases). This anaerobe has not been noted before in the intestine of man, he remarks.

Antibodies and Tuberculin Reaction in Lupus—Bethoux's research proved that the serum of persons affected with tuberculosis of the skin, and especially with lupus contains few, if any tuberculous antibodies. The intensity of the skin tuberculin reaction does not depend on the amount of antibodies.

Induced Koch's Phenomenon—Boquet and Negre produced Koch's phenomenon in guinea-pigs with virulent and avirulent tubercle bacilli, as also with paratuberculous and dead tubercle bacilli and others deprived of their fats. They assume consequently that the phenomenon is a reaction of local hypersensitiveness, chiefly to the proteins of these bacilli.

Vaccination of Rabbit Against Staphylococcus Infection—Urban's experiments showed that application of staphylococcus filtrates on a shaved skin caused in the rabbit an immunity against lesions of the skin from the same bacteria. The vaccination was negative by way of the digestive tract.

Radiosensitivity in Isolated Gland—Jolly noted an increased resistance to the roentgen rays in the thymus and a lymphatic gland shut off from the circulation. He presumes that the isolation, inducing a slower vital activity, protects the cells.

Action of Lung Fats on Fixation of Calcium—Experiments persuaded Roger, Binet and Vagliano that the fats of the lung besides vitamin A contain antirachitic vitamins which fasten the calcium in the organism.

Action of Calcium on Heart and Diuresis—In Brull's experiments the calcium strengthened the contractions of the isolated heart of a dog and a rabbit. A large dose of calcium produced transient auriculoventricular dissociation. A medium dose of calcium ions caused bradycardia in the animal, owing to the stimulation of the vagus center. The

calcium acted as a vasoconstrictor of the peripheral vessels, increasing the blood pressure. The diuresis did not change.

Blood Platelets and Ferments—Roskam's experiments did not show proteolytic or lipolytic ferments in the platelets of a rabbit and a dog.

Action of the Vagus on Blood Pressure—Zunz and Govaerts obtained by faradization of the vagus nerve a marked decrease of the blood pressure and slowing of the heart. It was accompanied in dogs by a humoral effect, similar to the effect from stimulation of the splanchnic nerve.

Action of Insulin on Clotting Time—La Barre's conclusion is that a weak dose of an impure insulin retards coagulation, both *in vivo* and *in vitro*. A pure insulin does not affect the clotting time.

Tubular Nephritis in Rabbits—Frandsen induced in rabbits a chronic tubular nephritis through administration of chromium. The elimination of chlorids was arrested, and elimination of nitrogen declined. Water secretion was intact, owing to the normal condition of the glomeruli.

Paris Medical

136 (July 5) 1924

- Cardiovascular Diseases in 1924. Lereboullet and Heitz—p. 1.
Importance of Repeated Radioscopy in Cardiovascular Disease. II. Vaquez and E. Bordet—p. 14.
Chronic Rheumatic Heart Disease. Ribierre and Pichon—p. 19.
Hypertension of Syphilitic Origin. A. Dumas—p. 26.
Intracardiac Injection of Epinephrin. D. Petit Dutailis—p. 30.

Hypertension of Exclusively Syphilitic Origin—Dumas reports four cases of variable high blood pressure in persons under 35 or older, in which the kidneys and aorta seemed to be normal. Treatment in time of this "solitary hypertension" might have warded off the fatal cerebral hemorrhage or gangrene compelling amputation.

Intracardiac Injection of Epinephrin—Petit Dutailis urges that this method of resuscitation should not be reserved for the last resort. In postmortem examination in over a hundred cases it was almost impossible to find the track of the needle. Gruel has reported two cases of successful revival in heart failure in diphtheria, Brumann in a case of sudden syncope in whooping cough, and Bodon in sudden cardiac syncope terminating an attack of angina pectoris under his direct observation. He adds another case to the thirty-three collected from the literature. The resuscitation was complete in 51.9 per cent. He knows of only two cases in which no benefit was realized. In two cases the surgeon continued the interrupted operation.

37 52 (July 12) 1924

- Gastrocolonic Fistula. R. Savignac—p. 37.
Tetanus of Cosmetic Origin. Lemanski—p. 44.
Conservation of Function After Fracture of Arm. Schwartz—p. 46.
Meningococcus Infection and Influenza. Dopter—p. 47.

Gastrocolonic Fistula—Savignac recalls that a fistula between the stomach and colon may be accompanied by diarrhea with undigested food in the stools. A fetid breath and belching with fecal odor often precede fecaloid vomiting. The roentgen-ray examination may be misleading unless repeated several times. Besides the rare cases of a traumatic fistula, tuberculosis and syphilis of the stomach or of the intestine as well as an abdominal abscess may exceptionally entail a gastrocolonic fistula. The common cause is an ulcer, especially cancer of the pylorus.

Tetanus Produced by Injury from Cosmetics—Lemanski reports a case of partial tetanus of the head and the neck. The infection followed slight erosions on the scalp produced by a comb while dyeing the hair.

Presse Medicale, Paris

32 577 584 (July 9) 1924

- Gouty Joints. M. Letulle and M. P. Weil—p. 577.
Dilatation of Stomach and Ulcer. G. Leven—p. 579.
Pathology of the Peripharyngeal Spaces. P. Truffert—p. 580.

Connection Between Dilatation of the Stomach and Ulcer—Leven insists that dilatation of the stomach precedes the ulcer. The dilatation involves irritation of the solar plexus followed by deficient nutrition of the pylorus. This produces changes in the circulation and consecutive mechanical and

chemical irritation of the pyloric mucosa. The local changes are complicated with spasms, infection of the mucosa and adhesions. The dilatation of the stomach has to be treated first, then both dilatation and ulcer, with surgical intervention if this fails.

32 585 596 (July 12) 1924

- *Receptive Cells in Local Immunity. A. Besredka—p. 585.
Hematoma in Ectopic Pregnancy. M. Chaton—p. 587.
Leriche's Periaortic Sympathectomy. Papillon and Cruceanu—p. 588.
Recent Works on Tuberculin Therapy. L. Cheinisse—p. 589.

Local Immunity—Besredka explains local immunity as that obtained through vaccination of a single organ, although it is mostly accompanied by a general immunity. Local immunity of this kind does not depend on antibodies. It occurs in anthrax and streptococcus vaccination in which the toxins have a selective affinity for receptive cells in the skin. Anti-typhoid and antidyenteric vaccines are instances of local immunity; the toxin combining with the receptive cells in the intestines. Thus vaccine therapy, he says, does not cure the affected receptive cells but protects the healthy receptors and checks the infection. It may be assumed that some serums contain, besides the antibodies, a specific antitoxin which vaccinates the receptors and produces local immunity. Therefore, the receptive cell is a fourth factor in immunization supplementing the triad of virus, phagocytes and antibodies.

32 597 608 (July 16) 1924

- Sex Climate in Treatment of Tuberculosis. Bernard and Iour—p. 597.
Syphilis and Angina Pectoris. I. Gallavardin—p. 598.
Hydatid Cyst in Ischiofemoral Foramen. Vergny et al.—p. 602.
Antagonism Between Tonus and Automatism of the Vessels. R. Schrapf—p. 602.

Connection of Syphilis with Angina Pectoris—Gallavardin's statistics of 450 instances of angina pectoris in connection with overexertion show that angina pectoris is of syphilitic origin in all cases combined with an aortic aneurysm, in 90 per cent of patients with aortic insufficiency, and in 33 per cent of cases without aortic disturbance but under 50 years of age.

32 609 620 (July 19) 1924

- Specific and Nonspecific Bacteriotherapy. J. Dravsz—p. 609.

Specific and Nonspecific Protein Therapy and Bacteriotherapy—Five observations of asthma and personal research proved to Dravsz that most infectious and chronic diseases such as are submitted to nonspecific protein therapy, manifest a hypersensitization. The hypersensitization is of anaphylactic origin. As the anaphylactic shock has no curative effect protein therapy therefore should be avoided as it exposes the patient to a superposed sensitization in addition to the sensitization he already has. Even in so-called specific bacteriotherapy the anaphylactic and antianaphylactic reactions forming the therapeutic response are not actually specific to the infecting microbe.

32 621 628 (July 23) 1924

- *Subungual Hematoma in Tetanus. L. Berard and A. Lumiere—p. 621.
*Tobacco and Angina Pectoris. L. Gallavardin—p. 622.
Topography of Trauma Semilunar Spine. D. Berceanu—p. 622.

Subungual Hematoma and Tetanus—Berard and Lumiere found a subungual hematoma in five of seven cases of tetanus. A blood effusion beneath the nail is a favorable culture medium for tetanus bacilli as the effusion is cut off from the circulation. Prophylactic serotherapy is indispensable.

Tobacco and Angina Pectoris—Gallavardin relates that of 200 men with angina pectoris but no signs of syphilis, 27 per cent had never smoked tobacco and an additional 4 per cent had given up smoking years before the first attack of angina pectoris. Only 18.5 per cent were immoderate smokers among the 137 others; 38 per cent of them were mild smokers. Including the nonsmoking women in fully 50 per cent of his total cases of angina pectoris, tobacco cannot be incriminated.

Revue de Chirurgie, Paris

62 363 442 1924

- Resection of Carotid Artery with Cancer of Tongue. Delbet—p. 363.
Gastro-Enterostomy with Single Tier of Suture. Petrescu—p. 369.
*Fracture of the Ankle. G. Ferry—p. 375.
*Hydatid Cysts of Long Bones. H. Costantini—p. 401.

Nonoperative Treatment of Fracture of Malleoli—Ferry refers to fracture of both malleoli and Dupuytren's (Pott's) fracture, saying that his experience in forty two cases confirms the advantages of simple reduction under roentgenoscopic control and the use of a splint with plaster, holding the foot in the extreme varus position, maximal hyperadduction, from the very first. By this means it is possible to obtain complete anatomic and functional repair, unless so much has been clipped off that reconstruction is impossible without direct access.

Hydatid Cysts in Long Bones—Costantini gives summaries of fifty-three cases including one from his own experience. The limb was saved in twenty-seven cases, and seven other cases were necropsy surprises. The onset is insidious and there is no pain until infection occurs. Fracture may be the first symptom to call attention to the lesion.

Schweizerische medizinische Wochenschrift, Basel

51 669 692 (July 24) 1924

Invasion of Jejunum in Gastro-Enterostomy H. Vulliet—p. 669
Roentgen Rays, Blood and Agglutinin Formation C. Frei and A. Alder—p. 670
Tuberculosis and Dermographia G. Stutz—p. 676
Postencephalitic Disturbances Jorger—p. 679
T. Predisposition E. Hanhart—p. 680 Conc n

Roentgen Rays, Blood and Agglutinin—Frei and Alder found no lowering of the agglutinin titer after roentgen irradiation. The production of agglutinins occurs without regard to the severity of the roentgen injury to the blood formation. Simultaneous irradiation and immunization was advantageous. It seems that the agglutinins are not formed in the same place as the blood.

Tuberculosis and Dermographia—Stutz found a certain parallelism between the Pirquet reaction and the increased dermographia after painful stimuli in tuberculous patients. Both reactions were frequently more marked over the diseased lung.

Brazil-Medico, Rio de Janeiro

1 317 332 (June 7) 1924

*Uremia and Mental Derangement H. Roxo—p. 317
Aseptic Flushing of Abdominal Cavity J. Sant Anna—p. 320
Murmur at Base in Aortic Insufficiency J. L. de Mesquita—p. 322
Experiences with Insulin in Diabetes O. Clark—p. 324

Uremia and Mental Derangement—Uremia was responsible for 33 per cent of the thirty-one deaths among the 1505 persons admitted to the Institute of Neuropathology at Rio de Janeiro in 1923. The mental derangement was of the paroxysmal confusional type with extreme irritability and lucid intervals. Roxo warns that an attempt to reduce the agitation with a sedative adds the toxic action of the drug to the uremic poisoning, with possibly fatal result.

1 333 348 (June 14) 1924

*Treatment of Anthrax Cassio de Rezende—p. 333
Nature of the Nerve Force A. L. Pimenta Bueno—p. 336
Aneurysm of the Arch of the Aorta Cardoso Fonte—p. 340
Three Fulminating Cases of Epidemic Meningitis Gonies—p. 343

Protein Therapy in Anthrax—De Rezende's illustrations show the extensive anthrax process on the middle of the back treated with parenteral injections of milk and local application of an unguent and cataplasms. Healing was soon complete. The protein therapy seemed to infuse a new vitality into the elderly tissues.

Prensa Medica Argentina, Buenos Aires

11 93 120 (June 30) 1924

Viscosimetry in Tuberculosis Bonorino Udaondo and Casteigts—p. 93
*Latent Tuberculosis in School Children Cabella and Oliver—p. 95
*Experiences in Dermatologic Clinic J. L. Carrera—p. 97
Radium in Gynecology Bazterrica and Figueroa Casas—p. 99

Viscosimetry in Tuberculosis—The viscosity quotient (Czepar and Torday) ranged from 17 to 25, average 21, in 15 healthy adults; from 21 to 31, average 26, in 15 patients with incipient tuberculosis; and from 28 to 44, average 41, in 49 patients with advanced and progressing tuberculous lesions in the lungs.

Latent Tuberculosis in School Children—Cabella and Oliver obtained a positive intradermal tuberculin reaction in

7358 per cent of the 157 supposedly healthy children in a Buenos Aires school in one of the poorest districts.

Sodium Salicylate in Dermatology—Carrera extols the fine results realized in psoriasis and in eczema on a gouty basis under treatment with intravenous injection of sodium salicylate. He used a 20 per cent solution. Parenteral protein therapy proved disappointing in all the various skin affections.

Autohemotherapy in Dermatology—In Carrera's forty cases given this treatment, it proved exceptionally effectual in idiopathic pruritus and furunculosis. It cured in one case of vulgar pruritus that had resisted all other internal and external measures through four years and in one of simple pruritus of two years standing, one of pruritus in a diabetic and in two of essential pruritus but no effect was apparent in four other pruritus cases. The effect was good in some and nil in other cases of eczema, purpura and venereal dermatitis.

Revista Medica del Uruguay, Montevideo

27 145 188 (May) 1924

*Adhesive Pericarditis Scremini and Montes Pareja—p. 145
Double Pyramidal and Extrapyramidal Syndrome J. M. Estape—p. 1
Febrile Syphilitic Disease of Liver J. B. Morelli—p. 163
Heart Block Gandolfo Canessa—p. 176
Febrile Syphilitic Disease of Liver H. Artucio—p. 18

Adhesive Pericarditis—Scremini and Montes Pareja comment on the amazing improvement that followed Brauer's cardiolysis in the young man aged 17 whose adhesive pericarditis was of the gravest type with the Wenckebach-Broadbent-Cejka and other signs. Except for persisting tricuspid insufficiency, he seemed to be restored to health for a month but then indiscretions in diet entailed uncontrollable vomiting fatal in four days.

Febrile Syphilitic Disease of the Liver—In Morelli's case the wetnurse had been infected by a syphilitic infant but the lesion on the nipple had healed without other manifestation. A year later jaundice with intermittent fever afternoons for two weeks gradually subsided under mercurialunctions and potassium iodid. Five years later an operation for gallstones was done in spite of Morelli's protests. No gallstones but a tumor-like mass was found which proved to be an agglomeration of four gummas confirmed by the microscope. The woman's liver seems entirely sound at present sixteen years since the last specific treatment. The short interval between the infection and the first liver disturbance, the absence of enlargement of the spleen, the retention type of the jaundice and the rapidly progressive character of the disturbances until arrested by treatment were the special features of the case. In another case there was slight fever every afternoon for two years in an elderly man with a history of syphilis twenty-seven years before with pain in the shoulder and slightly enlarged and tender liver. Laparotomy on a boy aged 9, with intermittent fever for two weeks and enlarged liver revealed instead of the expected abscess, several gummas.

In Artucio's case the main features were the protracted variable fever and the enlargement of liver and spleen. The peculiarly rapid and complete cure under treatment distinguished the entire group in these febrile hepatitis cases.

Semana Medica, Buenos Aires

1 1251 1302 (June 26) 1924

*Diagnosis of Hydatid Cyst E. Troise et al.—p. 1251
Insulin in Diabetes in Children Navarro and Dabusti—p. 1255
Diagnosis of Cyst in Pancreas J. R. Goyena—p. 1258
Papillomatosis of Penile Urethra J. Salleras—p. 1265
Vaccine Therapy in Gynecology L. Allende Lezama—p. 1266
Radium Treatment P. Castro E. Calada—p. 1273

Sedimentation Test in Differentiation of Cancer and Hydatid Cyst—Troise, de Marval and Rovere noted that the speed of sedimentation of erythrocytes was always within normal range with a hydatid cyst so long as there was no suppuration. When suppuration occurs the speed is accelerated and rapidly progressive, while with cancer acceleration is slowly progressive.

Papillomatosis of Penile Urethra—Salleras' case teaches the danger of leaving any papilloma in this region. Phimosis

had interfered with drainage, and the entire penile urethra had been destroyed by the results of suppurative and increasing crops of papillomas. He advises immediate destruction of a papilloma with glacial acetic acid, nothing else answers the purpose so effectually.

2 152 (July 3) 1924

Blood Transfusion in Childbirth Hemorrhage De Gaudino—p 1

Congenital Laryngeal Stridor F Schweizer—p 6

*To Render Fetal Heart Sounds Audible at a Distance Beruti—p 9

Ileus in Amebiasis J R Goyena—p 10

*Blood Serum After Roentgen Ray Exposures Roffo and Correa—p 17

Radium Emanations in Treatment E J Jonquieres—p 23

Hemoclastic Crisis in Gallstone Surgery Fox and Rossignoli—p 30

Protecting Action of Yeast Against Anthrax in Rabbit Tynn—p 31

To Render Fetal Heart Sounds Audible—Beruti presents evidence claiming priority by six months over publications elsewhere in this line. He not only made it possible for all in the room to hear the heart sounds of the fetus in the uterus in the last month of pregnancy but was able to record them on the revolving drum.

The Serum After Exposure of Cancer to the Roentgen Rays—Roffo and Correa chart the findings in the blood serum of eight controls free from cancer, nine persons with some form of malignant disease, and twenty-seven with cancer treated by roentgen ray exposures. The surface tension and the viscosity were always augmented in the irradiated cancer cases but the findings were conflicting in regard to the specific gravity, conductibility and pH.

Archiv für Kinderheilkunde, Stuttgart

74 241-320 (July 12) 1924

*Etiology of Rickets F Wilschke—p 241

Septic Anemia in Infants M Frank—p 256

Water Metabolism in Muscle H Lubinski—p 263

*Basal Metabolism in Children W Klein et al—p 286

Etiology of Rickets—In Wilschke's serial examinations of 870 infants at Graz the severe forms of rickets were always found associated with lack of sunlight. The main factor seems to be the deficiency in sunlight-permeated air for the infant to breathe. There seems to be something in sunned air which wards off rickets, possibly by sensitizing the vitamins in the food. Without it there is dyscrasia manifested in rickets. Over 83 per cent were breast fed of the 38 per cent that had rickets.

Basal Metabolism in Children—The wide differences in the basal metabolism of children between 7 and 10 observed by Benedict were not confirmed by the research on twelve children reported here. The calories ranged from 1061.8 to 1188 in ten of the children and in the others the figures were 972.1 and 1253.1.

Beiträge zur klinischen Chirurgie, Tübingen

132 1247 1924

Death from Unsuspected Tumor in Trachea Petren and Sjövall—p 1

Blood Transfusion in Surgery E Hempel—p 7

*Implant for Para Articular Arthrodesis M Kappis—p 93

*Invagination Ileus After Gastro-Enterostomy M v Brunn—p 106

Chyle Fistulas H W Knipping and H Kümmell Jr—p 123

Experimental Fractures of Joints A Schmidt—p 129

Tardy Rupture of Tendon R Dittich—p 150

Perforation After Invagination Ileus E Becker—p 155

*Acute Atrophy of Bone H Herfarth—p 165

*Mechanism of Nerve Blocking O Wiedhopf—p 191

*Reflex and Sensory Phenomena with Surgical Disease I Rasdolsky—p 200

Resection of Diaphragm for Cancer E Hesse—p 215

Histology of Kohler's Disease T Hühne—p 226

Etiology of Subacromion Bursitis N v Hedry—p 244

Implant Outside Hip Joint—Kappis reiterates the importance of the periosteum for the growth of new bone. In using an implant to reinforce the hip joint outside the joint proper he advises to use a bone shaft complete, with periosteum intact.

Invagination after Gastro-Enterostomy—Brunn describes the eighth case on record of ileus from invagination of the jejunum into the gastro-enterostomy opening and says it is the first case in which the roentgen-ray findings were so characteristic that no one can mistake the clinical picture henceforth after looking at the two roentgenograms he reproduces.

Acute Atrophy of Bone—Herfarth's study of Sudeck's atrophy is based on 250 cases of unmistakable acute atrophy, with 12,500 roentgen plates. There had always been some preceding fracture or other trauma, freezing, burn, or (twelve cases) acrodermatitis atrophicans. Some vasomotor disturbance, by reducing the blood supply, was evidently the main factor, supplemented by the disuse of the limb.

Mechanism of Nerve Blocking—Wiedhopf's clinical and experimental research has confirmed that the vessel nerves running in the spinal nerves, feel the effect of local anes thesia first, then come the sensory nerves and then the motor nerves. Return of function proceeds inversely. This effect on the vasomotor nerves is evident both subjectively and objectively in the local hyperemia which it entails. This local hyperemia can be utilized to demarcate in amputating for gangrene, and to detect spastic contraction of a vessel in case of nerve trauma. The data presented testify anew to the advantage of shutting off the circulation before operating. They suggest further that the drop in the blood pressure with splanchnic nerve blocking is a physiologic phenomenon. It might be well to combat this extreme drop in the pressure from the paralysis of peripheral nerves by intravenous drip infusion, with epinephrin during the anesthesia.

Reflex and Sensory Phenomena from the Vagus Nerve in Course of Surgical Affections of the Internal Organs—Rasdolsky examined 188 patients from this point of view, including eighty-nine examined during and after the operation. The most frequent phenomenon noted was hyperalgesia of the posterior wall of the outer ear. A prick, pressure or tap of a hammer at this point induced violent sometimes unbearable pain in practically every case of an acute inflammatory process in the internal organs (especially cholecystitis perforated ulcer or appendicitis), ptosis, pylorospasm, disturbance from adhesions and heart defect and always on the side nearest the lesion, or most pronounced on that side. The only failures in the entire list were in two cases of gastric cancer and two of pylorospasm in which there was very little pain anywhere and two of kidney colic two days after recovery. "The sensory phenomena and reflexes from the vegetative nervous system form a periscope through which we can inspect conditions in the internal organs." Even the common headache with affections of the internal organs usually begins in or is restricted to the side of the lesion. In one case of pains from sagging kidneys, the left headache subsided after nephropexy on the kidney on that side but persisted on the right. Pain on pressure of the emerging points of the trigeminal and occipital nerves was pronounced on the side of the lesion in about 75 per cent, and muscled in nearly 90 per cent. The uvula was displaced away from the diseased side in 60 per cent but this displacement is occasionally seen in the healthy. A distinct difference in the color of the iris was manifest in more than 60 per cent, in 80 per cent the color looked faded and in 20 per cent it looked brighter than its mate. This difference always disappeared on recovery. Lacrimation on the affected side was more pronounced in some of the cases. The same symptom was observed with affections of the most diverse organs and paralleled them in intensity.

Deutsche medizinische Wochenschrift, Berlin

50 975-1006 (July 18) 1924

*Diagnosis and Treatment of Hemorrhoids L Kuttner—p 975

*Surgical Treatment of Hemorrhoids R Muhsam—p 977

*Treatment of Cataract W Uthoff—p 978

Modern Eyeglasses H Erggelet—p 980

*Active Treatment of Abortion G Burghardt—p 983

Clinical Leukocyte Counts R Hammerschlag—p 984

*Syphilis Among the Kalmucks M Poental—p 986

*Etiology of Erysipeloid D Acel—p 988

*Staining of Germs in Sections F Horalek—p 988

Tuberculin and Sedimentation Tests Tegtmeyer—p 990

*Conservative Treatment of Furuncles Canon—p 991

*Logopedics L Froschels—p 992

Diagnosis and Treatment of Hemorrhoids—Kuttner requires a digital examination of the rectum and endoscopy including the sigmoid flexure in every case of hemorrhoids. Otherwise cancer dysentery or gonorrhea of the rectum might be overlooked. Too drastic laxatives and irritating enema should not be allowed. About 75 to 100 cc of olive

oil infused with a soft tube in the evening acts favorably. The anal region should be cleaned carefully after every defecation. Paper and sponges are not suitable. Cotton is to be preferred. Cold sitz baths are advantageous. Surgical treatment is indicated if hemorrhoids cause much discomfort or continue to bleed or are prone to prolapse.

Surgical Treatment of Hemorrhoids—Muhsam describes various surgical methods of treatment of hemorrhoids, especially the cauterization which he prefers.

Treatment of Cataract—Uthoff relates his opinion on every detail of the treatment of cataract on the basis of his experience with 7,000 operations performed by himself.

Active Treatment of Abortion—Burghardt recommends exclusively active treatment even in infected abortions. He prefers curettement to the digital procedure because it requires less dilatation of the cervix and is more aseptic. Only one died of the fifty-three women with infected abortion whom he treated actively.

Syphilis Among the Kalmucks—Rosental considers syphilis as the main cause of the decrease of the Kalmuck tribe. It is transmitted as a rule extragenitally. The Kalmucks are very hospitable, and share the pipe and glass of sour milk with all the guests. Arsphenamin injections ("the German needle") became very popular with them.

Etiology of Erysipeloid—Acl found bacteriologically and serologically unquestionable germs of swine erysipelas in five patients with erysiploid.

Staining of Spirochetes and Other Germs—Horalek describes his method for staining *Spirochaeta pallida* in sections. A double and protracted staining with hematoxylin revealed cocci and other germs even in sections of organs which had been kept for ten years in formaldehyd.

Conservative Treatment of Furuncles—Canon treated 110 patients with furuncles and eighteen with carbuncles exclusively with immobilization and a dressing with a weak solution of aluminum acetate.

Treatment of Speech Defects—Logopedics—Froschels discusses the importance and the border-lines of the science of speech.

Klumsche Wochenschrift, Berlin

3 1345 1384 (July 22) 1924

- *Experimental Epidemiology F Neufeld—p 1345
- *Colloidoclastic Reactions E Meyer—p 1352
- *Blood Serum After Small Injections H Handovsky—p 1354
- *Connections Between Vagus and Sympathetic W Fick—p 1355
- *Hormones and Oxidation of Carbohydrates A Gottschalk—p 1356
- The Thyroid and the Blood P Bose—p 1357
- *Roentgen Exposures and the Offspring W Schmitt—p 1358
- *Blood Phosphates in Myxedema M Landsberger—p 1360
- *Phagocytosis After Splenectomy H Hirschfeld and Sumi—p 1361
- *Ventral Position for Infants W Lasch and M Fischer—p 1362
- Cutaneous Pigment Reaction E Loewy—p 1362
- *Ectoplasm and Endoplasm of Germs and Immune Bodies H Braun and R Nodake—p 1363
- Flocculation Test in Syphilis H Sachs et al—p 1363
- Vasomotors in Avitaminosis D Alpern—p 1364
- *Duodenal Intubation in Typhoid Carriers A Remus—p 1365
- Hemoptysis G Schroder—p 1366
- Study of Heredity V Jollos—p 1369
- Conc n

Experimental Epidemiology—Neufeld reviews critically the results of the epidemiologic experiments of Topley, Amoss and Webster. He believes in the importance of the quantity of infectious germs. It is not necessary to kill the last remaining bacillus.

Colloidoclastic Reactions—Meyer, with his collaborators, observed changes of blood colloids after intravenous injections of from 10 to 20 cc of a 10 to 20 per cent glucose solution. A leukopenia may also follow the injection. Other crystalloids sometimes have similar effects. He attributes them to a change of reactivity of the vagosympathetic system caused by the primary changes in the blood colloids. He reproaches Widal for having already coined the same term (colloidoclasia), and declares that he means something different by it.

Blood Serum After Small Injections—Handovsky found in normal human subjects (not in healthy cattle) a broad emulsion layer after shaking the serum with ether. The separation was perfect in some patients after intravenous injection

of a small amount of glucose or sodium chlorid solution. Serum from these patients showed the same phenomenon when the substances were added in vitro. The amount of cholesterol shaken out was greater than in the sample taken before the injection, although the total amount was unchanged.

Connections Between Vagus and Sympathetic—Fick found a constant connection between the ganglion nodosum of the pneumogastric and the superior cervical ganglion of the sympathetic. In 14 per cent of the cases the ganglions were united into one. This is of obvious importance in extirpation of the cervical ganglion.

Oxidation of Carbohydrates and Hormones—Gottschalk found an inhibition of the acetaldehyd formation in emulsions of liver and muscle in a 0.1 per cent solution of epinephrin. Thus it acts antagonistically to insulin which enhances this oxidative phase of glycogen cleavage.

Roentgen Exposures and the Offspring—Schmitt saw no abnormalities in eight children of women whose ovaries had been irradiated to the degree of a temporary menopause.

Blood Phosphates in Myxedema—Landsberger found less phosphate in the blood serum of very small infants with congenital myxedema than in older babies. Thyroid treatment did not change the findings within three weeks.

Erythrophagocytosis After Splenectomy—Hirschfeld and Sumi observed a phagocytosis by monocytes in the circulating blood of splenectomized rats, mice and guinea-pigs. Some monocytes contained several cells. Phagocytosis by neutrophils occurred also.

Ventral Position for Infants—Lasch and Fischer observed early raising of the head and use of the arms in infants kept in the prone position.

Ectoplasm and Endoplasm of Germs and Immune Bodies—Braun and Nodake found different agglutinins and lysins for the ectoplasm and for the endoplasm of micro-organisms (especially typhoid and proteus bacilli). The ectoplasm antigen is thermolabile, and is necessary for the production of bactericidal serums. Bacteriotropins act on the endoplasm.

Duodenal Intubation in Typhoid Carriers—Remus requires an examination of the bile to exclude typhoid carriers. He found typhoid bacilli sometimes for weeks in the gallbladder bile while they were absent in the liver bile.

Medizinische Klinik, Berlin

20 991 1026 (July 20) 1924

- *Antitoxin Formation and Treatment T Madsen—p 991
- The Pupils in Cerebral Syphilis M Kasten—p 992
- *Spontaneous Hemostasis G Magnus—p 993
- *Ileus Symptoms in Appendicitis B Cohn—p 995
- *Action of Acetic Acid on Stomach J Vondorff—p 997
- *Economic Aspects of Asthma Isserlin—p 998
- Correction of Sunken Noses E Eitner—p 1000
- Lethal Addison's Syndrome in Malaria After Arsphenamin Treatment. L Detre—p 1001
- Treatment of Erysipelas S R Brunauer—p 1003
- Repeated Ileus O Steinke—p 1004
- Splashing Sound in Encephalography H Moro—p 1007
- Biochemistry of Skin Diseases Stumpfe and G Seiki—p 1007
- Survey on Otology Haenlein—p 1012
- Survey on Pathologic Anatomy S Graff—p 1014
- Medicine in Antiquity J Hirschberg—p 1024

Antitoxin Formation and Treatment—Madsen emphasizes the difference in the time of appearance of various antibodies. Morch found that the maximum concentration of bacteriotropins is reached in horses on the second day after the injection, while the agglutinins are strongest between the fifth and the seventh day. This might have therapeutic significance. Injection of some metal salts especially manganese chlorid, enhances the production of antibodies and is used as a routine procedure at Copenhagen. Walbum had interesting results in guinea pigs infected with tubercle bacilli. The most efficient way of administration of antitoxin is by the vein. Extremely large doses (up to 200,000) used in diphtheria reduced the mortality to 12 per cent. Such amounts of serum do not produce more serum sickness than small amounts, but are very expensive. The dose should be given preferably on the first day.

Spontaneous Closing of the Lumen of Injured Vessels—Under direct observation, Magnus noted a contraction of

femoral arteries and of capillaries. This contraction—not a thrombus—is the real cause of hemostasis. He believes that some hemorrhagic conditions may be due to a disturbance of this function of the blood vessels.

Ileus Symptoms in Appendicitis—Cohn reports a case of paralytic ileus from perforation in unsuspected appendicitis. The cause was not determined in spite of careful observation. He recommends that appendicitis be considered in every case of ileus of unknown origin.

Influence of Acetic Acid on Stomach Function—Vandorfy found that a decinormal solution of acetic acid suppresses the secretion of hydrochloric acid in a normal stomach. The motility is lessened. There is regurgitation from the duodenum and a secretion from the stomach which dilutes the fluid.

Economic Aspects of Asthma—Isserlin estimates the number of asthma patients in Germany as about half a million, which is not far from the number of tuberculous infections. The number of persons temporarily disabled by asthma might be about 110,000. There are about one fifth as many persons permanently disabled by asthma as there are by tuberculosis. He recommends a better organized fight against the disease.

Mitteil a d Grenzgeb der Med und Chir, Jena

37 545 691 1924

- *Development and Changes of Gallstones. B. Naunyn—p. 545
- *Heart and Circulation with Arteriovenous Aneurysms. A. Israel—p. 551
- *Spores and Rust Cells in Goiter. L. Merk—p. 573
- *Cholecystitis and Cholangitis. I. W. Gundermann—p. 581. II—p. 601
- *Chemistry and Histology of Goiters. T. Tobler—p. 622
- *Duodenal Intubation in Biliary Duct Disease. H. Bronner—p. 641
- *Gastric Ulcer in Pregnancy and Menstruation. A. Szenes—p. 652

Development and Changes of Gallstones—Naunyn deplors the lack of understanding of his conception of the fluid colloid nature of beginning gallstones. Such gels contain from the beginning over 20 or 30 per cent cholesterol, and continue to adsorb it from the bile and from the degenerated epithelium. Crystallization is only secondary. The section methods usually employed cannot reveal the structure. He keeps to his grinding of gallstones for microscopic examination.

Heart and Circulation with Arteriovenous Aneurysms—Israel reports on his experiences on eight patients with arteriovenous aneurysms of more than two years' duration. All of them had hypertrophy with dilatation of the heart. This is due to the increased filling of the heart by the strong influx from the artery into the vein. One patient with aneurysm of the carotis was not able to work mentally for any length of time until a few months after the operation. Another was cyanotic but had no subjective trouble except when lowering the head. Elevation of a lower extremity with an arteriovenous aneurysm of the popliteal artery caused distal a deathly pallor of the extremity due to aspiration of the blood into the vein. Stasis just sufficient to compress the veins restored the color. He confirms the bradycardia and increased pressure after compression of the site. The heart becomes smaller after the operation.

Spores and "Rust Cells" in Goiter—Merk found in goiters peculiar corpuscles resistant to concentrated sulphuric acid. He believes that they are spores. He also describes cells which he calls 'Rostzellen'. They contain cholesterol.

Cholecystitis and Cholangitis—Gundermann saw staphylococcus cholecystitis occasionally in children and frequently in patients between 20 and 30 years of age. Later it tends to be associated with cholelithiasis. The prognosis is good (one death among 132 patients) because staphylococci do not seem to induce grave suppuration in the gallbladder. Streptococci cause similar but more frequently recurring attacks. Colon bacillus infections cause death more often. Paratyphoid B is dangerous. Empyema, ulceration and perforation occur.

Chemistry and Histology of Goiters—Tobler determined the iodine content in various thyroids. He confirms the low iodine content in exophthalmic goiters. Patients who had been treated with iodids had larger amounts of it in the thyroid without regard to the clinical symptoms. Some of those who presented toxic symptoms after iodine treatment

had no larger amounts of iodine deposited than other patients without symptoms. The histologic examination showed in the majority, but not in all of these toxic cases, a resemblance to the findings in exophthalmic goiter. Ligation of the arteries produced rapid and good results.

Gastric Ulcer in Pregnancy and Menstruation—Szenes frequently found an amelioration of the discomfort from gastric and duodenal ulcer in pregnancy. He attributes it to the lowered acidity of the gastric juice, change in the position of the stomach, and fattening. Experiments on dogs revealed slightly greater tendency toward healing in the gravid animals. Menstruation increased the discomfort only in a few women. The menopause seems to be an aggravating factor.

Munchener medizinische Wochenschrift, Munich

71 791 1008 (July 18) 1924

- *Colloid Treatment. III. H. Bechhold—p. 971
- *Goiter Prevention in Switzerland. II. Eggenberger—p. 972
- Depressive Action of Artificial Sunlight. Pollitzer and Stolz—p. 977
- *Blood Pressure During Respiration. W. Hueck—p. 978
- Rissmann's Treatment of Tetanus. Süss—p. 980
- *Practitioners and Ileus. O. Specht—p. 981
- Mycoses of Sculp. K. Stordeur—p. 985
- Mineral Metabolism. Grumme—p. 985
- Vasomotor and Trophic Neuroses. H. Curschmann—p. 985
- Infant Mortality Statistics. F. Maurer—p. 987
- Estimation of Disability After Accidents. H. Kammerer—p. 989

Colloid Treatment—Bechhold found that mice die from paratyphoid or septicemic infection much earlier when kept in the incubator than at room or icebox temperature. Infected animals which had recovered after injections of various colloidal substances died from a recurrence of the infection when put into the incubator. The germs isolated from these animals failed to kill healthy mice even when the amount injected was very large. He believes therefore that colloidal treatment helps the animal to make the germs less virulent. He points to the interesting influence of extraneous factors (heat) on the provocation and course of a latent infection.

Goiter Prevention in Switzerland—Eggenberger agrees with Hunziker in regarding goiter as a reaction to a deficiency of iodine intake. Chittin's investigations made seventy years ago showed clearly the coincidence between low iodine content of water and food and the frequency of goiter. Nevertheless his opponents for a long time prevented the acceptance of this fact. The use of iodized table salt introduced into the canton of Vaud two years ago has given most encouraging results. Mothers who keep on using the old pure salt have as before about 50 per cent of babies with enlarged thyroids. The new-born children of those who use iodized salt have normal thyroids. He never saw injury from doses of iodine lower than 20 mg per month.

Blood Pressure During Respiration—Hueck measured the blood pressure while healthy subjects were holding their breath. He found that it increased in proportion to the conscious effort necessary for holding the breath. The blood pressure was lowered in the apneic phases of Cheyne-Stokes' breathing in a patient with hypertension.

Practitioners and Ileus—Specht publishes mortality statistics to demonstrate that practitioners should send immediately to the hospital every patient with any of the symptoms of ileus. Attempts to formulate an exact diagnosis in acute cases only make them lose precious time.

Zeitschrift fur Krebsforschung, Berlin

21 261 336 (July 15) 1924

- Biology of Cancer Cells. A. Fischer—p. 261
- Chemotherapy of Cancer. I. F. Ishiwara—p. 268
- *Electropic Treatment of Cancer. Karczag et al.—p. 271
- Tumor Growth in Relation to Nourishment. I. M. Hündel—p. 281
- Idem. II. Idem and K. Tadenuma—p. 285
- Treatment of Cancer by Induced Inflammation. Possibly as Postoperative Measure. H. Spude—p. 294
- Ovarian Tumor in a Fish. M. Plehn—p. 313
- Incipient Skin Cancer. W. Nissen—p. 320
- Action of Roentgen Rays on Organism. D. Lieber—p. 325

Electropic Substances in Treatment of Experimental Cancer—Karczag and his co-workers' vital chromoscopy has apparently demonstrated that the intramolecular arrangement

of certain stains is determined by the electrostatic charge and not by chemical agents. These stains display an affinity for connective tissue. In mouse cancer, the living cancer cells did not take up the stain, but fuchsin S, light green and water blue were electively attracted and stored by the necrotic portions of the malignant tumor, owing to their electrostatic attraction for the dyes.

Tumor Growth and Nourishment—Handel was unable to detect any influence on the growth of mice tumors from lack of salts in the food or addition of phosphates, but the growth of the cancer seemed to be promoted by feeding potassium, while it was checked slightly by feeding calcium.

Zeitschrift fur Tuberkulose, Leipzig

10 161 240 (May) 1924

- Nature of Tuberculin G Deycke—p 161
Latent Periods in Pulmonary Tuberculosis H Grau—p 176
Mild Generalized Tuberculosis F Traenkle—p 181
Connection of Amenorrhea with Tuberculosis C Stuhl—p 199
Effect of Castration on Tuberculosis F M Bricker—p 198
Sedimentation Test in Tuberculosis Windrath and Gornitz—p 203

Effect of Castration on Tuberculosis—Bricker says that normal rabbits inoculated with tubercle bacilli, started to lose weight at once while castrated rabbits did not change for a long time. It seems that the removal of the genital glands produces physiologic and chemical changes which enhance the resistance against the tubercle bacilli.

40 241 320 (June) 1924

- Effect of Certain Factors on Tuberculin Reaction E Lange—p 241
Addison's Disease in Cattle Pig I A Sumiyoshi—p 254
Tuberculosis in Prisoners H Thiele—p 264
Gymnastics in Therapy of Tuberculosis G Simon—p 266
Sedimentation Test in Tuberculosis Bochallı—p 274
Roentgenotherapy in Pleurisy T Barsony and J Hollo—p 278
Distention of Apex A Bogdanow and A Golemanow—p 280
Pulmonary Tubercles of Toxic Origin R Jaffe—p 284
Reply H Guillery—p 286

Sedimentation Test in Tuberculosis—Bochallı found a normal speed of sedimentation of erythrocytes in latent tuberculosis of the lungs and acceleration in active processes. The diagnosis cannot be based on this sign, but it may help in doubtful cases.

Roentgenotherapy in Pleurisy—Barsony and Hollo extol roentgen-ray treatment in chronic pleurisy without effusion. The pain is relieved after the first exposure but two or three more are necessary to avert a relapse. A surprising result was obtained in two cases of acute pleurisy. The irradiation was applied to the painful region at a focus distance of 30 cm with aluminum filter of 3 mm. The dose was four-fifths of the skin dose once a week, repeated three or four times. The treatment is contraindicated with a complicating pulmonary lesion.

Diagnostic Import of Induced Distention of Apex of Lung—Bogdanow and Golemanow noted that a tuberculous apex cannot be distended with the Valsalva experiment to the same extent as a normal apex. The difference is more marked if only one lung is affected. The distention cannot be produced in a pleuritic apex. It is negative in pneumothorax with pleural adhesions. If the walls of an anterior cavity are thick, the inflation is subnormal, it is exaggerated if the walls are thin. In emphysema the distention is increased.

Zentralblatt fur Chirurgie, Leipzig

71 1607 1670 (July 26) 1924

- Biliary Colic Without Gallstones F F Finkenheim—p 1608
Treatment of Furunculosis of Face A Gruca—p 1619
Plastic Operations on the Hard Palate W Rosenthal—p 1621
Intracardiac Injections in Heart Failure After Lumbar Anesthesia G Raechle—p 1628

Biliary Colic Without Gallstones—Finkenheim reports a series of seventy-four cases of biliary colic in which no gallstones were discovered at operation but in which, instead, inflammatory changes in the gallbladder or vicinity were found. Six died a mortality of 81 per cent.

Treatment of Furunculosis of the Face—Gruca reports excellent results in furunculosis of the face from the use of vaccines prepared after the Delbet method containing staphylococcus, streptococcus and pyocyanus, injected intramuscularly.

larly. After twenty-four hours, in every case without exception there was a distinct retrogression of objective inflammatory symptoms, the pus was thinner and usually eventually broke through. The fever caused by the injection disappeared within two days.

Nederlandsch Maandschrift v Geneeskunde, Leiden

12 379 419 1924

- *Psychic Factors in Infant Feeding Cornelia de Lange—p 379
*Blood Transfusion in Leukemia J Munk and J de Geus—p 386
Kidney Tumors in Children J C Schippers—p 400

Psychic Factors in Infant Feeding—De Lange refers to what she calls 'sensitive children' in institutions, and describes three typical instances to show what can be accomplished by change to another room and diversion. Even very young infants are sensitive to music and she has found that infants with pylorospasm can often be coaxed to take the thicker food necessary if they are given a little baby talk and "cranned music." One child that vomited habitually weighed only 2660 gm at the sixth month. It was then transferred from its quiet room to the noisiest part in a ward and every nurse that had a free moment was encouraged to sit down beside this child talk to it a little and turn on the music or even take it up. The child was also given a cracker. The weight began to increase from the first day and the fretful child was transformed. Some infants will not take the bottle except from a certain attendant and these women have to be brought from the washroom or kitchen each time when their turn of service takes them out of the ward.

Blood Transfusion in Acute Lymphatic Leukemia—Munk and de Geus relate that in the girl of 6 and the boy of 5 a striking change for the better was apparent at once after transfusion of blood from the mother or father. The erythrocytes and the hemoglobin in the blood stream showed a marked increase but the transfused neutrophils seemed to have been destroyed at once. This suggests that leukolysis or leukotoxins may be responsible for the whole clinical picture but experiments on animals injected with serum from these patients showed no appreciable difference between this and normal serum. Subcutaneous injection of 10 per cent gelatin solution was not followed by a polymorphonuclear leukocytosis. The benefit from the blood transfusion was transient, and both children died in about a month.

Kidney Tumors in Children—Schippers gives the details of twelve cases from his own service. Of 145 operative cases recently compiled only five of the patients are known to be living without recurrence four years later. All of his own patients died, with or without operation except one who is now taking a course of roentgenotherapy the condition being inoperable and a girl who for nearly two years—four years ago—presented symptoms of a tumor in the right kidney but it then suddenly subsided completely and permanently. It must have been hydronephrosis which spontaneously corrected itself.

Nederlandsch Tijdschrift v Geneeskunde, Amsterdam

2 1140 (July 5) 1924

- *Internal Medicine in the Netherlands in the Last Seventy Five Years A J van der Weyde—p 6
*Medicine Since 1849 C F A Koch—p 21
Development of Ophthalmology Since 1849 J van der Hoeve—p 13
Idem Otorhinology H Burger—p 43
Lupus in the Netherlands S Mendes da Costa—p 48
*Death Rate in the Netherlands Since 1848 H J W D Tortuyn—p 53
*The Excess of Male Infants at Birth J Sanders—p 91
British Laws on Vaccination Against Smallpox Putto—p 97
*Smallpox in the Netherlands Since 1872 J G Sleeswijk—p 101

Medicine in the Netherlands During the Last Seventy-Five Years—The Netherlands Medical Association celebrated its seventy-fifth anniversary recently, and this number of the *Tijdschrift* is devoted to a review of what has been accomplished during this three quarters of a century. Tortuyn gives numerous charts of the declining death rate. In 1849 the death rate per thousand inhabitants was 312, in 1923 99. From 1919 to 1922 the average death rate per thousand inhabitants was 116 and the death rate per hundred living children born was 71. Both of these figures are lower than

in North America, England, Denmark and Switzerland, but Australia and New Zealand have still lower figures. Known cases of malignant disease have increased from 35 per ten thousand inhabitants in 1866 to 115 in 1921. The consumption of alcoholic beverages has declined from 753 liters per capita in 1852 to 288 in 1922. Diphtheria and scarlet fever seem to prevail about the same as ever, but the mortality of 72 per cent in scarlet fever in 1899 dropped to 103 and 078 in 1922 and 1923, and of diphtheria from 21.14 in 1895 to 671 and 559.

Excess of Boy Babies at Birth—The age of the parents at the birth is recorded in 215,038 Amsterdam cases, in 25,000 at Rotterdam, and in Methorst's compilation of 683,473 cases throughout the Netherlands. The largest excess of boy births was with mothers between 30 and 34 in the first group, and between 25 and 29, or 20 and 24 in the others.

Smallpox in the Netherlands—Sleeswijk corrects an error in a report of his address on this subject. Instead of only 300 cases of smallpox since the vaccination law of 1872, the figure should be 3,000, but Fortuyn's charts show zeros for the last seven years.

2 175 322 (July 12) 1924

- Experiences with Abortion Cases VI J. A. van Dongen—p. 182
- *Unrecognized Hip Joint Anomalies L. v. d. S. van Ommeren—p. 190
- Sanatorium Treatment of Tuberculosis J. van Epen—p. 193
- *Treatment of Cancer of the Esophagus W. F. Wassink—p. 203
- Hematemesis in Childbirth W. F. K. Gouwé—p. 208
- Causal Agent of Scarlet Fever C. H. H. Spronck—p. 209
- Medical Impressions of America C. U. Ariens Kapper—p. 236

Hip Joint Disease—Van Ommeren remarks that every hip joint responds in its own way to disturbances of any kind, the result being a great variety of clinical pictures, but Calot has cleared up the confusion in great measure by tracing the disturbance in many cases to a congenital subluxation. It often escapes detection, but tailors and shoemakers comment on the frequent lack of symmetry in the hip joints, legs and feet, the result of overlooked anomalies of the kind.

Cancer of the Esophagus—Wassink has tried to treat cancer of the esophagus with radium in 18 cases in the last year. Three have been practically cured so that they have been free from disturbances for from three and a half to eight months, 3 others were much improved for a few months but then died from pericarditis or other cause. In 3 cases the stenosis was too tight to allow the use of radium at all and in 7 others only imperfectly.

Acta Pædiatrica, Upsala

3 235 434 1924

- *Acidosis of the New Born A. Ylppo—p. 235
- *Pathogenesis of Diabetes Insipidus L. Salomonsen—p. 261
- Hypoplastic Fetal Chondrodysostrophia D. D. Lebedew—p. 290
- *Intestinal Infantilism W. Pipping—p. 342
- Pathogenesis of Anaphylactic Asthma K. Baagøe—p. 369
- Spinal Cord in Congenital Syphilis C. De Lange—p. 385
- *Tuberculosis in First Five Years of Life A. Lichtenstein—p. 397
- *Congenital Syphilitic Myocarditis N. Johannsen—p. 419

Acidosis of New-Born—Ylppo found that the hydrogen ion concentration of the gas-free serum and blood corpuscles is higher in the new-born than in infants a few hours older. Saponin hemolysis causes an increased acidity of the blood.

Pathogenesis of Diabetes Insipidus—Salomonsen demonstrates a quicker elimination of added sodium chloride in diabetes insipidus than in a normal control. This is explained by the usual retention of water with the salt in healthy persons and the inability of the insipidus patient to retain water. There is no inability to concentrate chlorides in diabetes insipidus but simply an increased water elimination. Pituitrin decreases the diuresis. It increases the concentration of sodium chloride in the urine, but decreases its absolute amount. It seems that its primary action is the inhibition of water secretion. The water is retained in the blood, and the lowered excretion of chloride tends to keep up the isotonia of the serum although it is not sufficient for it. The excretion of organic constituents of the plasma is not inhibited by pituitary extracts. Fever decreases the water elimination in insipidus as well as in other diseases. Reduction of the intake of sodium chloride failed to lower the polyuria in his patient. Even when it is successful, the decrease in water elimination

is not proportionate to the decreased chloride intake. It is possible to explain the result by the lowering of the chloride content of the tissues which would cause thirst.

Intestinal Infantilism—Pipping reports the history of six children with recurring intestinal disturbances and retarded physical development. Only one of them survived. Proteins were better tolerated than carbohydrates and fat. Albumin milk gave fair results. Cow's milk was unsuitable. On the other hand human milk without any addition seems to have saved the life of the last patient, a girl $2\frac{1}{2}$ years old.

Tuberculosis in First Five Years of Life—Lichtenstein finds in various localities a regular proportion between the tuberculosis death rate in adults and in children under 5 years of age. The tuberculosis rate in cattle in the different counties of Sweden varies considerably without any relation to the death rate of children.

Congenital Syphilitic Myocarditis—Johannsen believes that syphilitic myocarditis is not quite rare in congenital syphilis. Clinically, it may cause evident organic lesions. Sudden death may occur.

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- *Gastric Secretion in the Healthy A. O. Haneborg—p. 369
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- *Hematoporphyrinuria I. Harbitz—p. 422
- Cholecystitis from Pneumococcus Mucosus Grøndahl—p. 442
- Alström or Smallpox? Y. Utvedt—p. 450
- To Prevent Decomposition of Urine Brandt and Stokstad—p. 456

Gastric Secretion in the Healthy—Haneborg's series of tests on two healthy medical students with bouillon, tea, coffee, chocolate, pepsin, peptone and bitter tonics demonstrated among other things that the "psychic" secretion of gastric juice does not continue for more than half an hour at most and accounts for scarcely 20 per cent of the total secretion after a meal. Anything taken into the stomach, even water, induces some secretion, but it is not proportional to the amount ingested, and hence can hardly be explained by mechanical factors. The antrum or pyloric bristles were found responsible for the chemical secretion. The amount required is not large, and there is less gastric secretion and less diuresis when this optimal amount is surpassed. This depressing influence of large amounts was particularly striking in the tests with coffee. Caffeine-free coffee did not increase gastric or renal secretion more than water alone. Bouillon, tea and coffee leave the stomach early, in an hour or hour and a half, and the action of bitter tonics seems to be almost exclusively in promotion of peristalsis. The extensive research has apparently demonstrated that the motor function of the stomach is more important for health than conditions in the gastric secretion. As long as the stomach is regularly evacuated, even hypersecretion does no harm. The aim in treatment of dyspepsia and other stomach disturbances should therefore be to ward off or correct the slightest anatomic or nervous impairment of the motor function.

Sedimentation Test in Tuberculosis—De Besche's study of fifty tuberculous men corroborates the value of normal suspension stability of the blood as a sign that the tuberculous process is latent or stationary.

Hematoporphyrinuria—Harbitz describes as a clinical entity the fourteen year course, with the necropsy findings, in a case of idiopathic constitutional hematoporphyrinuria. The attacks of abdominal pain with vomiting and port wine urine returned once or twice a year and at the sixth year led to a futile operation for assumed gallstones. In three other cases the porphyrinuria was a symptom in the course of acute yellow atrophy of the liver or of excessively large doses of narcotics or after chloroform anesthesia. The frequent occurrence of urobilin with the porphyrin in the urine and certain necropsy findings tend to incriminate the liver.

To Preserve Urine for Examination—Brandt and Stokstad extol the advantages of adding sulphuric acid or hydrochloric acid instead of disinfectants. A pH of 5 or 5.2 seems most propitious to prevent decomposition in the twenty-four hour urine.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL 83, No 10

CHICAGO, ILLINOIS

SEPTEMBER 6, 1924

THE DIABETIC PROBLEM OF TODAY*

ELLIOTT P JOSLIN, M.D.
BOSTON

A new race of diabetic patients has come on the scene. The duration of the diabetes among patients entering the hospital for treatment during 1923 was 5.6 years, or two years greater than in 1921 and 1922. The length of the disease among these living diabetic patients exceeds, by a year, the entire duration of the diabetes among all my fatal cases up to the year 1914. According to the standards of a decade ago, the average living hospital diabetic patient today is already more than one year dead.

The diabetic patient of today is an older diabetic patient—eleven years older than a decade ago. Early fatal cases and groups of living patients in former years were 41 years of age, but a similar group this last year was 52 years old.

The increasing morbidity of diabetes is reaching its maximum. This is evident on every hand. No increase is to be noted in the number of children coming for treatment, and since, as mentioned above, the patients seen are older, they represent, to a considerable extent, a milder type of the disease, which of itself indicates not so much new cases, as a greater zeal displayed in their discovery. Finally, the steadily increasing number of persons with doubtful diabetes, often found at insurance examinations, is proof positive that, in such communities as Boston and New York, the "round-up" of the diabetic patient is nearly accomplished.

IMPORTANCE OF PREVENTION

The present halt in the progressive tendency of the morbidity of diabetes, however, will not last long unless preventive measures are adopted. Every child saved from death with diphtheria and scarlet fever, every young adult rescued from typhoid and tuberculosis, makes a candidate for future diabetes. Wherever sanitary science is at its best, the morbidity of diabetes will be at its highest, because diabetes is fifteen times as common among those over 40 years of age as among those under 40 years, and the percentage of Americans today over 40 is rapidly increasing.

A generation ago, the average expectation of life was 38 years, and now it is 57. Therefore, diabetes is many times as frequent in the whole community today as heretofore and, with increasing longevity, is destined to be more common, but not necessarily more common for the first four decades. Already, in Boston and New York, one death in sixty is due to diabetes. This is not

a pleasing thought, because the chief complication of diabetes is premature old age. Although we, as a nation, want to live to be old, we do not want to be old too soon.

To stamp out a pestilence, one studies and attacks it where its ravages are worst. Yellow fever was investigated and prevention found in Cuba, not in the United States. The pathway is equally plain in diabetes. First, this disease is known to be fifteen times as frequent among adults, secondly, this disease is from ten to twenty times as common among the fat, thirdly, this disease is two and a half times as common among Jews. Any campaign to eradicate diabetes, therefore, should yield maximal returns if directed toward the prevention of obesity and toward its diagnosis among the adult fat females, and particularly among the Jews.

DIABETES NOT A CONGENITAL STIGMA OF THE JEWISH RACE

The Jew, in my opinion, is not prone to diabetes because he is a Jew, but rather because he is fat. Jews are fat, though, shameful to relate, there are few statistics of the comparative weights of even a thousand Gentiles and a thousand Jews. These I am now able to add through the courtesy of the Mutual Life Insurance Company of New York (Table 1). Different interpretations can be put on this table, but it would appear that more Gentiles than Jews were underweight and more Jews than Gentiles overweight.

A study of the weights of my adult diabetic Jewish patients before they contracted the disease shows that the tendency is distinct for them to be fatter than the average diabetic patient under similar conditions. Eighty-five per cent of the Jewish patients were overweight, in contrast to 70 per cent of a mixed series of 1,000 Gentiles, 47 per cent of them were underweight, in contrast to 12.2 per cent of the non-Jewish patients.

If diabetes were a characteristic of the Jewish race, it should be manifested from youth to old age, but this is not the case. On comparison of the age incidence of the disease in 500 of my Jewish patients with the age incidence of the disease in 2,611 of all my patients, I find that, instead of the incidence running parallel through all the decades, it was but half as common among Jews in the first two decades of life, and less common in the third, sixth, seventh and eighth decades, leaving the fourth and fifth decades alone to exceed the Gentiles in age frequency. A Jewish child is no more prone to diabetes than the child of a Gentile.

In New York, three tenths of the population is Jewish, and in Boston one tenth, and yet the diabetic death rate is essentially the same in the two cities, and in Brookline, a suburb of Boston, where the Jewish population is hardly more abundant than in Easton, but

* Read before the Section on Practice of Medicine at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

where the inhabitants undoubtedly average older, richer and, presumably, fatter, the rate is double, one death in every thirty deaths being due to diabetes. These three considerations should remove from the Jew the stigma of a congenital tendency to diabetes.

INSULIN

Insulin is better than any of us thought a year ago. A coma patient in 1924 recovers far more surely and simply than in 1923. The country practitioner can put a catheter in the bladder and thus determine each hour, from examination of the urine, what the next dose of insulin should be. The diabetic patient who stands next in the profit and joy derived from insulin is the one of preinsulin days who was most faithful to treatment. What it has done for such patients is past belief. Insulin has clinched the proof that the patient with mild diabetes is often the one to fall into coma needlessly and that diet alone is sufficient for a large proportion of diabetic patients in advanced life. When such patients live rigidly on the prescribed diet, which they are apt to do when taking insulin, to their surprise they often

before has done, and the public has acquired a knowledge of diabetes and a respect for scientific medicine that is almost unbelievable. From a newspaper clipping

TABLE 3—Changes in Jewish Patients*

Age Yrs	Num ber of Cases	Below Standard Weight			Nor mal Aver age Zone to +5% to -5%	Above Standard Weight								Per Cent for the Decade Below Nor mal Zone
		30	20	10		6	11	21	31	41	51	61	71+	
		to 21 %	to 11 %	to 6 %		to 10 %	to 20 %	to 30 %	to 40 %	to 50 %	to 60 %	to 70 %	to 71+ %	
1-10	7	0	2	1	1	0	1	0	0	0	0	0	0	43
11-20	17	0	2	2	6	3	2	2	0	0	0	0	0	24
21-30	54	0	0	1	11	0	8	12	6	3	3	0	1	2
31-40	103	0	0	3	11	4	23	29	17	13	7	1	4	3
41-50	143	0	3	1	9	9	27	39	13	13	6	2	3	3
51-60	13	0	2	1	4	6	17	18	5	5	1	0	7	7
61+	23	0	0	0	4	1	4	5	4	4	0	1	0	0
1-10	40	0	1	11	49	32	8	79	74	43	29	9	8	

* Variation from the normal of the maximum weights at or prior to onset of diabetes of 470 diabetic Jewish patients calculated for height, age and sex.

in Ottawa, I learned first of the hypoglycemic reactions of defeated marathon runners in Boston.

TABLE 1—Height and Weight of Jews and Gentiles*

One thousand Gentiles																		
Ages	Total Number Cases	Average Height		Average Weight Pounds	Average Weight for 1 inch Height Pounds	Below Normal Weight				Normal Weight -5% to +5%		Above Normal Weight						
		Ft	In			-3% to -15%	-15% to -7%	-7% to -1%	Total		Cases	Per Cent	+1% to +5%	+5% to +10%	+10% to +25%	+25% to +35%	Total	
									Cases	Per Cent							Cases	Per Cent
15-19	38	5	8	141.8	2.07	—	16	15	31	51.6	4	10.5	—	2	1	—	3	7.9
20-29	360	5	9	150.9	2.90	3	71	147	217	60.3	98	27.2	6	6	7	2	4	1.5
30-39	321	5	9	162.0	2.30	2	41	90	133	10.8	86	26.4	49	44	10	4	10	3.8
40-49	183	5	8	169.1	2.47	—	10	76	46	1	47	2.7	40	33	10	7	90	4.2
50-59	80	5	8	166.0	2.42	—	8	17	20	31.3	20	25.0	15	14	4	2	80	47.8
60 and over	13	5	8	168.0	2.48	—	—	1	1	7	5	38.1	4	3	—	—	7	53.9
Total	1 000	5	9	156.7	2.28	5	116	392	453	4.3	0	26.0	178	102	32	15	287	28.7

One thousand Jews																		
Ages	Total Number Cases	Average Height		Average Weight Pounds	Average Weight for 1 inch Height Pounds	Below Normal Weight				Normal Weight -5% to +5%		Above Normal Weight						
		Ft	In			-3% to -15%	-15% to -7%	-7% to -1%	Total		Cases	Per Cent	+1% to +5%	+5% to +10%	+10% to +25%	+25% to +35%	Total	
									Cases	Per Cent							Cases	Per Cent
15-19	51	5	7	138.7	2.07	1	11	32	37	72.5	9	17.6	5	—	—	—	5	9.8
20-29	381	5	7	151.1	2.4	—	6	128	181	48.3	11	20	41	20	17	4	80	21.5
30-39	279	5	7	158.8	2.36	1	20	61	90	3	17	57	37	13	6	113	40.5	
40-49	220	5	7	160.8	2.40	2	15	39	56	14.5	10	30	14	7	106	46	46	
50-59	56	5	7	160.6	2.39	—	4	10	14	2.0	17	30.4	14	4	5	2	20	44.6
60 and over	4	5	6	161.5	2.30	—	1	—	1	2.0	1	—	1	—	1	—	—	50.0
Total	1 000	5	7	151.4	2.31	4	110	263	82	8.2	—	8.5	168	96	50	19	333	32.7

* A comparison of average height and weight and the average weight per inch in height among 1,000 Gentile and 1,000 Jewish patients, all male, selected at random from cases examined by home office medical examiners together with a distribution by weight groups with the percentage deviation from normal weight.

find that their insulin can be omitted. Perhaps one fourth of my patients who take insulin later become able to leave it off and live comfortably on diet alone.

TABLE 2—Changes in Gentile Patients*

Age Yrs	Num ber of Cases	Below Standard Weight			Nor mal Aver age Zone to +5% to -5%	Above Standard Weight								Per Cent of Each Decade Below Nor mal Zone
		30	20	10		6	11	21	31	41	51	61	71+	
		to 21 %	to 11 %	to 6 %		to 10 %	to 20 %	to 30 %	to 40 %	to 50 %	to 60 %	to 70 %	to 71+ %	
1-10	21	0	3	2	8	5	2	0	0	1	0	0	0	24
11-20	68	2	13	8	23	6	7	2	1	0	1	0	0	31
21-30	183	0	15	14	44	14	29	8	4	2	1	0	2	23
31-40	170	1	12	14	29	21	33	20	15	11	7	5	2	16
41-50	264	3	9	8	29	17	54	68	31	24	17	8	6	8
51-60	231	0	6	7	13	29	47	46	42	15	12	5	4	5
61-70	90	0	0	2	9	10	19	24	16	7	1	1	1	2
71-80	23	0	2	1	8	3	2	3	3	1	0	0	0	13
1-80	1,000	6	60	56	173	106	193	161	112	61	39	19	15	

* Variation from normal of maximum weights at or prior to onset of diabetes of 1,000 diabetic Gentile patients calculated for height, age and sex.

The educational value of insulin has been enormous. It has promoted among the profession and the patients a recognition of the value of the diet as nothing here-

The power of insulin is not yet exhausted, and new developments can be expected. A young man in the seventh year of his diabetes came to me in November, 1923, with a fasting blood sugar of 0.29 per cent, taking 88 units of insulin daily. During the last six months, he has not been seen by any physician, but he and his competent nurse have been able to reduce the dosage of insulin to 20 units coincidentally with (what I have found unusual) a gain in weight of 20 pounds (9 kg). How can one escape the conviction that a regeneration of the islands of Langerhans has taken place in this case?

STATUS OF AUTHOR'S FIRST ONE HUNDRED AND TWENTY-SEVEN PATIENTS TREATED WITH INSULIN

One hundred and twenty-seven of my patients, selected chiefly for the unusual severity of the disease, have taken insulin on the average for about eighteen months, and all for more than one year. This group was reported a year ago, and for that reason is reported again. Twenty-three of the patients are dead, and 104 are alive. The duration of the diabetes in the fatal cases was 5.4 years, and in the living patients has already reached 5.3 years. Even at this early date, it is

evident that the series will outstrip in duration, by far, all previous series of cases that have come under my observation. But the significance of this record is disclosed by a study of the fatalities.

Although one of the living patients has had the disease 24 3 years, not one of the patients who died succumbed during the first year of the disease. There were nine deaths from coma, but only two of these occurred in the hospital. Seven of these coma deaths were needless—they were the result of ignorance and inexperience or deliberate neglect of treatment, even to the extent of giving up insulin. In preinsulin days, a diabetic patient who broke diet might live for some time, but *facile descensus averno* is the pathway of that diabetic patient who has already outlived the usual expectation of his disease and, on insulin wings, soars high in diet. Of the remaining fourteen deaths, septicemia, meningitis, erysipelas, tuberculosis, multiple abscesses, and intestinal obstruction in a woman over 80 years of age, each accounted for one, while cardiovascular disease and pneumonia each accounted for four deaths.

Ninety three of the 127 patients are still taking insulin, and the average dose is 21.4 units. Ten patients are alive and not using insulin.

The average gain in weight of the patients is 13.5 pounds (6 kg.), or 14.4 per cent. One patient, B. A., a girl, has gained 23.2 pounds (10.5 kg.), or 81 per cent, and another, 44.2 pounds (20 kg.) or 58 per cent.

EVOLUTION OF TREATMENT

The evolution of the treatment of diabetes epitomizes the trend of medicine. Thirty years ago, everybody prescribed for the diabetes. Then came a period when chemical inventions were novel and complex, and their intricacies demanded specialists for their execution and interpretation. Now we are reverting to the earlier epoch when the diabetic patient required the assistance of the general practitioner at his best. This is plainly apparent from the cases one now has to treat. Of the complaints of the diabetic patients today, one fourth are surgical, one fourth related to the circulation, and one fourth of a general nature, with practically the whole of the remaining fourth dependent on acidosis—the intimate complication of the disease. To meet all these demands, the physician who treats diabetic patients must practice medicine with eyes alert to all angles of the art, but, above all, he must be one hundred per cent efficient in his endeavor to prevent the development of future cases.

Five Hundred Fatal Cases of Diabetes—Coincident with the increasing use of insulin, the death rate from diabetes has been declining for a year and half. There is no proof as yet that these two phenomena are connected. To determine whether fatal cases of diabetes had received insulin, and if so, for how long, the Metropolitan Life Insurance Company analyzed data submitted by physicians who had certified the death certificates in 500 recent cases of diabetes. It found that less than one-half of these fatal cases received insulin at any time and that 62 per cent of those which did received insulin for a period of less than one month. In 31 per cent of the cases analyzed, insulin had been administered for a period of less than one week before death. Coma was the most frequent complication in these fatal cases. Arteriosclerosis was a complication in 24.8 per cent, chronic nephritis in 23.4 per cent, and gangrene in 23.4. It was also shown by this study that insulin was much more commonly used in hospitalized cases than in the cases treated at home and that it is more extensively used in the larger cities than in rural areas or small towns.

HYPERINSULINISM AND DYSINSULINISM *

SEALE HARRIS, M.D.

BIRMINGHAM, ALA.

Diabetes, of which hyperglycemia is a manifestation, is essentially a condition due to a deficient secretion of insulin by the islands of Langerhans, and, according to modern medical nomenclature, should be called hypoinsulinism. Diabetes, or hypo-insulinism, therefore, bears the same relation to the internal secretion of the pancreas that myxedema, or cretinism (hypothyroidism) has to that of the thyroid gland.

We know that hypothyroidism is not the only dysfunction of the thyroid gland and that there is a hypersecretion of that important organ, hyperthyroidism, in which there are certain characteristic symptoms, i. e., the syndrome called hyperthyroidism. It has been observed that hyperthyroidism sometimes precedes hypothyroidism.¹ It seems probable that there are other dysfunctions of the islands of Langerhans, besides hypo-insulinism, and that an excessive formation of insulin may occur. Hyperinsulinism should produce definite results, i. e., a reduction in blood sugar which, when below a certain limit, about 0.070, brings on characteristic symptoms, now known as the insulin reaction. It also seems probable that a deficiency of the secretion of insulin may follow prolonged excessive work of the islands of Langerhans, just as in other glands, or organs, hypertrophy and hyperactivity may be followed by degeneration, atrophy and loss of function.

It was this line of reasoning that caused me to think that there may be such a condition as hyperinsulinism, and when I saw the insulin reaction in diabetic patients, I realized that I had seen many nondiabetic patients who had complained of the same symptoms, i. e., hunger, weakness and the anxiety neuroses. I mentioned this to Dr. Banting while on a visit to the diabetes clinic in the Toronto General Hospital in March, 1923, and asked him whether he or others had observed an excessive secretion of insulin in laboratory animals or human beings. He said that they had done nothing on that line and that he had seen nothing in medical literature on the subject, and we have not been able to find any reference to hyperinsulinism in any medical publication.

Knowing the amount of food ingested at a given time, by means of blood sugar determinations we are able to estimate with some accuracy the degree of insulin secretion, particularly since we know that by the administration of insulin, hypodermically, the amount of sugar in the blood may be reduced to any level, depending on the number of units administered and on the amounts of glucose-forming food ingested. It therefore seemed probable that, since hypoglycemia is the result of hyperinsulinemia, a study of the blood sugar in patients who have symptoms of hyperinsulinism should show readings of below 0.070 (70 mg. per hundred cubic centimeters of blood).

HYPOGLYCEMIC REACTIONS IN NONDIABETIC PATIENTS

The first patient, a physician, who presented symptoms of hyperinsulinism, consulted us, March 19, 1923,

* Read before the Section on Practice of Medicine at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

¹ Barker, Hoskins and Mosenthal. *Endocrinology and Metabolism*. New York: D. Appleton & Co. 1922. 300, 302.

saying that every day about one hour before his noon meal he felt weak, nervous and so hungry that he could not work. He had found that he would get relief from taking candy or a soft drink or from drinking milk, eating fruit, or from eating anything. It was then about an hour before his time for luncheon, and a specimen of blood was obtained for the determination of its sugar content. It was found to be 0.065 (or 65 milligrams per hundred cubic centimeters of blood). On another occasion, May 15, 1923, the same hour, the blood sugar was 0.070. This patient has no other symptoms, except that he had been overweight and had lost about 25 pounds (11.3 kg.). His blood pressure was low, systolic 95, diastolic 60. A well balanced diet was given him, with instructions to take food of some kind every three hours. A year later, this physician told me that he had been feeling well since he had been taking food five times a day.

Oct. 4, 1923, a patient, who had been under observation at times for various digestive troubles for seven years, complained in these words: "I get so hungry and weak every day about an hour before meals that I feel as though I will die if I do not eat something. I believe that I would die if I had to go two or three hours past meal time without anything to eat. Eating anything always relieves me, and I am comfortable for three or four hours after meals." He was told to wait in the office to let us see him at a time when he was having the symptoms of which he complained. His blood sugar

impaired during that time. She complained of one striking symptom in these words: "I awaken at from 12 to 2 at night with a nervous rigor, or quivering, very weak, disturbed feeling, cold extremities and am hungry. Eating an orange relieves me." She also complained of the "nervous rigors" when her stomach was empty during the day. A blood sugar reading was ordered taken during one of these nervous rigors, and it was found to be 0.047 (the lethal low blood sugar point in rabbits is 0.040). Two hours after having had 25 gm. of glucose, the blood sugar was 0.130. This patient presented symptoms of both hyperinsulinism and hypoinsulinism, apparently a dysinsulinism analogous to patients showing evidences of both hyperthyroidism and myxedema. This patient had no sugar in the urine at any time during a six weeks' stay in the infirmary, though, since her family physician is a careful, well prepared physician, I do not question her having had glycosuria when she weighed 220 pounds (99.7 kg.) and was no doubt eating an excess of glucose forming foods. A detailed report of these three cases will be given with the complete histories of other patients that we believe had hyperinsulinism.

The foregoing three cases showed symptoms of hyperinsulinism, and, with blood sugar findings below 0.070, stimulated us to undertake further studies of the blood sugar at the fasting period in nondiabetic patients. Since that time blood sugars have been made a routine in the examination of all patients.

It should be remembered that all our patients come to us for treatment of some gastro-intestinal or nutritional disturbance, and all in this series were ambulatory, though some of them were sent to the infirmary for rest, diet and general observation. Blood sugar determinations were made in 253 patients, ninety-two of whom were diabetic patients who showed varying degrees of hyperglycemia. Of the 169 cases twelve patients had blood sugar readings of below 0.070 in specimens obtained during the fasting period, and all of these with two or three exceptions, had symptoms that could result from hypoglycemia. The blood sugar determinations were made by Dr. W. S. Geddes, or under his direction. The Folin-Wu method was used.

BLOOD SUGAR READINGS IN STARVATION

The question is to whether these low blood sugar readings were due to a lack of food or to a hyperinsulinemia was considered. If due to a lack of food, the starving patient should show a low blood sugar. We chanced to have four patients who were literally starving to death. Three were cases of carcinoma, with almost complete occlusion of the esophagus. All three patients were very much emaciated, and had been almost unable to take any food for several days or weeks before they came to us. None of them gave a history of symptoms of hypoglycemia. The blood sugar readings on these three patients were 0.090, 0.084 and 0.090.

We also had a patient who had almost complete stenosis of the pylorus due to tumor, ulcer or carcinoma of the pyloric end of the stomach. The roentgen-ray examination showed 90 per cent retention of the barium meal in six hours, and 75 per cent retention in twenty-four hours. This patient had vomited practically everything she had eaten for weeks and was in a state of marked emaciation. The blood sugar was 0.079.

It seems that, in cases of starvation, the amount of sugar in the blood is kept within the normal range by endogenous catabolism. There is some evidence to

Blood Sugar Readings and Urinary Findings

Time	Blood Sugar	Urine Test
12 15 p. m.	0.098	No sugar
12 45 p. m.	0.116	No sugar
1 15 p. m.	0.167	Trace of sugar
2 30 p. m.	0.135	No sugar
3 30 p. m.	0.067	Trace of sugar

was 0.065 at noon. He was told to eat a full meal and come back two hours later. The blood sugar was then 0.130. A glucose tolerance test (100 gm. of glucose) was given him, with the blood sugar readings and urinary findings given in the accompanying table.

This patient lived in a suburb, about an hour's ride by trolley, and after the glucose tolerance test went home without eating anything. He said that before he reached the end of his trolley ride he was so weak that he could hardly walk, and that it was with great effort that he was able to get home. He said that he thought he would die before his wife could get him something to eat, and felt so faint that he could hardly eat, but that he felt all right after eating. Since his last blood sugar reading at 3.30, two hours before he had food, was 0.067, it was probably much lower when he had the severe hypoglycemic reaction. In this case, the glucose seemed to have stimulated the secretion of insulin, which continued after the glucose had been disposed of. There also seems to be a lowered glucose tolerance in this case, probably a dysinsulinism, in a patient who is potentially diabetic.

Jan. 23, 1924, a married woman, aged 39, with a history of a transient glycosuria on two occasions in the previous eighteen months, presented marked symptoms of hypoglycemia without having had insulin. She had been overweight, having weighed 220 pounds (99.7 kg.), when a trace of sugar was first found in the urine, in the summer of 1922. She was then placed on a low fat, low carbohydrate diet and reduced to 160 pounds (72.6 kg.), but her health had become

show that patients with carcinoma have reduced carbohydrate tolerance, but even so, in these cases the amount of glucose derived probably from the protein of the patient's own tissues was sufficient to keep the blood sugar above the point at which hypoglycemic reactions occur. Since, in the starvation cases, the blood sugars were within the low normal range, and none of the four patients had symptoms of hypoglycemia, and the patients having blood sugars below 0.070 with few exceptions had symptoms of an overdose of insulin, it surely seems that there is such a condition as hyperinsulinism.

CONCLUSIONS

1 Hyperinsulinism is a condition, perhaps a disease entity with definite symptoms, i. e., those described as being due to hypoglycemia.

2 It seems probable that one of the causes of hyperinsulinism is the excessive ingestion of glucose-forming foods and that, as the result of overactivity induced by overeating, the islands of Langerhans become exhausted and hypo-insulinism (diabetes) follows. It is possible that the hunger incident to hyperinsulinism may be a cause of overeating, and, therefore, the obesity that so often precedes diabetes.

3 It seems probable that dysinsulinism, either an increase or a decrease in the secretion of insulin, may follow infection or trauma of the pancreas.

4 Since excessive hunger is a symptom of hypoglycemia, it may be that normal hunger is the call for glucose and that it may be in part or wholly of pancreatic origin and not entirely an expression of an empty stomach. It is also possible that, associated with ulcer of the stomach or duodenum, there may be a coexisting disorder of the pancreas, and that the frequent feedings which give relief in ulcer may do so by supplying the glucose to meet the needs of overfunctioning islands of Langerhans. In one case of ulcer, we found a low blood sugar.

5 Since blood pressure readings have been low in all except two of the nondiabetic patients who have had symptoms of hypoglycemia, it seems possible that hypo-adreninism may be associated with hyperinsulinism. It also seems probable that secretory disorders of the islands of Langerhans may be associated with dysfunctions of the thyroid, the pituitary bodies and other organs of internal secretion.

6 Fractional tests of gastric secretions after the Ewald meal have been made in several nondiabetic patients having symptoms of hyperinsulinism, with variable results, so that there is no apparent relation of secretory disorders of the stomach to pancreatic dysfunction.

7 No studies of the external secretion of the pancreas were made in these cases. It seems probable, however, that since a chronic pancreatitis is probably a cause of dysinsulinism, the glands secreting trypsin, amylase and steapsin are often involved, with either increased or decreased function.

REPORT OF CASES OF HYPERINSULINISM

CASE 1—*History*—A physician, J. G. P., aged 62, a white man, married and having six children, all living, March 19 1923 complained of an uncomfortable sensation in the stomach when empty, a weak and nervous feeling before dinner and supper but said he got relief from taking a soft drink, fruit, or from eating a meal. He slept well for three or four hours after retiring and then remained awake the remainder of the night. He tired easily, but had no dyspnea on exertion. He was irritable and worried unnecessarily over business and professional matters. The blood pressure had been low at times, the systolic ranging from 110 to 85.

The family history was not important.

He had had the usual diseases of childhood, without sequelae. During adult life he had been strong, robust and active in professional and civic affairs. He had typhoid fever in 1895, pneumonia in 1902 and again in 1919, influenza, three times, and cystitis in 1910. He said he had no venereal infection. He had had digestive disturbances at times for the past six years, a heavy aching sensation in the epigastrium, sour stomach, etc.

He was a small eater now though formerly he ate immoderately. He drank one cup of coffee for breakfast. He had been overworked for years. He smoked excessively and had been a moderate drinker at times since early manhood.

During the past five or six weeks he had worked very hard, and began having discomfort in the stomach about meal time, usually before dinner and supper when the stomach was empty associated with a depressed weak feeling and nervousness. Relief would be obtained by eating his usual meal, fruits, or even taking a soft drink. Often after sleeping three or four hours at night he would remain awake the rest of the night. There was frequently during the day a feeling of weakness and he became fatigued easily from moderate exercise.

Examination—Nothing of importance was observed on physical examination. The teeth, tonsils, thyroid, heart, lungs and abdomen were apparently normal. The blood pressure was systolic 115, diastolic 70, pulse 45, and one month later systolic 95, diastolic 60, pulse 35. The weight was 163 pounds (74 kg), height, 5 feet 11½ inches (181.6 cm), the standard weight being 184 pounds (83.5 kg).

Examination of the urine revealed specific gravity, 1.026; albumin, 0; sugar, 0; indican, a trace; no cells or casts. Blood examination revealed hemoglobin 80, red cells 4,360,000, white cells 7,200, polymorphonuclears, 65 per cent, small lymphocytes, 34 per cent, large lymphocytes 11 per cent, no malaria. There was no occult blood in the feces and there were no parasites. The Wassermann reaction was negative. The blood sugar, April 27, was 0.065, May 15 0.070.

A fractional examination of the gastric contents after the Ewald test breakfast revealed:

Total acidity	15	25	35	45	30
Free hydrochloric acid	5	20	30	30	15

On roentgen-ray examination, the heart and the lungs were found normal, the gastro-intestinal tract was in a position level with the umbilicus, there were no filling defects, the twenty-four hour barium meal was in the cecum to the hepatic flexure.

The pathologic diagnosis was, no lesion found. The functional diagnosis was hyperinsulinism, arterial hypotension, intestinal toxemia, 21 pounds (9.5 kg) below the normal standard weight.

The etiologic factors were overwork and worry, with possible infection of the pancreas in an attack of influenza or pneumonia.

Treatment and Result—The patient was instructed to eat three small meals a day, with a glass of milk or fruit three hours after meals. One year later the patient informed us that he had had no symptoms since he has been taking food five times a day.

CASE 2—*History*—H. J. R., aged 52, a miner, married, with one child living, Oct. 5 1923, complained of hunger spells when his stomach was empty preceding the time for his regular meals and often late in the afternoons. He became very nervous and weak when hungry, perspiring freely and often having to sit down to rest. He got so weak that he could hardly eat. At night he got cold and had sweats, aching all over.

The family history was not important.

He had the usual infectious diseases of childhood without any complications. He had the grip in 1889, and the same year he had skin lesions suggesting syphilis but two Wassermann tests were negative. He had symptoms of digestive disturbance for fifteen years, gas pains in the stomach, constipation, mucus in the stools, and headaches. He had a bronchitis which was suggestive of tuberculosis, though no positive diagnosis was made.

He had been taking one cup of coffee daily, and smoked from eight to ten cigars each day. Formerly he drank alco-

holic stimulants excessively His diet had consisted largely of meats and carbohydrates

At least fifteen years before, he began having constipation, gas in the stomach, and pains in the abdomen, and he passed mucus in the stools He frequently had severe headaches, associated with constipation In October, 1919, following an injury that crushed the left arm and necessitated amputation, the digestive symptoms became worse For the past few months he had been almost incapacitated for work because of extreme hunger weakness and nervousness for one or two hours before meals He found that taking food relieved the symptoms

Examination—The teeth, tonsils thyroid, lungs, heart and abdomen were normal The left arm was amputated below the elbow The weight was 175 pounds (79.4 kg), height, 5 feet 11 inches (180.3 cm) the standard weight being 178 pounds (80.7 kg)

The blood pressure was systolic, 120 diastolic, 80, pulse, 40 Blood counts and differential were normal, there were no malarial parasites The Wassermann reaction was negative The blood sugar October 4 was 0.065 (fasting), two hours after a meal, 0.130 The glucose tolerance test Jan 9, 1924 was 0.098 0.116, 0.167, 0.135 0.067, with a trace of sugar in the urine at 0.167 After the last blood reading, the patient went home and suffered considerable weakness, tremors sweating and collapse, but eating relieved him The urinalysis revealed specific gravity 1.025, albumin, 0, sugar, a trace, ketones, a trace, the microscopic examination was negative Later a test showed no sugar There were no parasites but a trace of occult blood was present in the feces

Fractional examination of the gastric contents after an Ewald test breakfast revealed

Total acidity	40	45	60	80	90	75	60
Free hydrochloric acid	25	30	50	70	80	60	55

On roentgen-ray examination, the heart and lungs were normal, the stomach was 4 inches below the umbilicus, there were no filling defects and barium in seventy-two hours occupied the transverse colon

The pathologic diagnosis was chronic colitis, possibly chronic pancreatitis, the functional diagnosis, hyperinsulinism potential diabetes, hyperchlorhydria

The etiologic factor was improper eating The colitis may have been the focus of infection for a chronic pancreatitis

Treatment and Result—Food was taken every three hours while the patient was awake Tincture of belladonna was prescribed The patient improved, but has to take food every three hours

CASE 3—History—Mrs. E. E. G., aged 39, white, married with no children Jan 23, 1924, complained of often waking during the night with a feeling of extreme weakness and nervousness, and that she had to take the juice of an orange for relief She suffered from gas in stomach and constipation, poor appetite nervousness and glycosuria

The family history was unimportant

She had the usual diseases of childhood with no complications She had a lung abscess in 1889, with hemorrhages and was in bed for six months, after which she was an invalid for two years She had malarial fever in 1914, influenza in 1918 and two mild attacks since

She had been in the habit of eating excessively of sweets and pastry She drank one cup of coffee a day

Sugar had been found in the urine one and one-half years before but was controlled by diet She had no other symptoms of diabetes She awakened at between 12 and 2 in the night quivering with weakness and a disturbed feeling, and found it necessary to take the juice of an orange for relief The extremities were cold Gastric distress, following a tooth extraction began one year before, with general debility gas, fullness and stubborn constipation She had a poor appetite She was very nervous and under high tension

Examination—The teeth had been extracted, the tonsils removed The eyes reacted to light and in accommodation There was slight exophthalmos There was no apparent enlargement of the thyroid There was a slight tremor of the hands The lungs and heart and the abdomen were normal The pulse was 100 The blood pressure was systolic, 120 diastolic 80 pulse, 40 The weight was 160 pounds (72.6

kg), the maximum weight, in September, 1922, 210 pounds (95.2), the height, 5 feet, 4 inches the standard weight being 136 pounds (61.7 kg)

The urinalysis revealed specific gravity, 1.015, a faint trace of albumin, no sugar, the microscopic examination was negative

The hemoglobin was 90 There were 4,264,000 red cells and 7,600 white cells polymorphonuclears, 64 per cent small lymphocytes, 35, transitionals, 01, no malaria The Wassermann reaction was negative There was no occult blood in the feces, the microscopic examination was negative The blood sugar when the patient was fasting was 0.047, one hour after eating, 0.130, during a nervous spell, 0.095 After taking 20 gm of glucose she became much better At another time when she was fasting, the blood sugar was 0.111

Fractional examination of gastric contents after an Ewald breakfast was unsuccessful on account of severe vomiting

Roentgen-ray examination showed the heart normal, slight fibrosis of the lungs the gastro intestinal tract and stomach level with the umbilicus, no filling defects, and at the end of twenty four hours the barium occupying the cecum to the hepatic flexure

The pathologic diagnosis was endocrine disturbance chronic colitis and mild diabetes the functional hyperinsulinism hyperchlorhydria and intestinal toxemia She was 24 pounds (11 kg) overweight

The etiologic factors were overeating and a diet deficient in vitamins

Treatment and Result—The treatment prescribed was rest a low fat low carbohydrate diet and buttermilk or orange juice between meals and at night if she awakened Her condition became much improved

CASE 4—History—Miss O. S. aged 29 white a teacher seen March 15, 1924 complained of being very nervous and weak about noon and that she was worse if she had eaten a light breakfast She was underweight She suffered from urticaria poor appetite, and weakness

The family history was not important

She was healthy and strong during childhood, having the usual infectious diseases without complications She had a malarial attack in 1898 severe tonsillitis with tonsillectomy, in 1922 and chronic appendicitis for several years without having an operation

She had felt weak and nervous since the tonsillectomy in 1922 In October 1923 while in school she began having an eruption on the thighs and the knees and later on the arm blotches of rash with raised red spots itchy at first, lasting half an hour About noon she usually felt weak and became more nervous until she ate something This was worse if she had eaten a light breakfast

Examination—The patient was slender and undernourished The teeth and gums were normal the tonsils had been removed, the eyes were normal There was a slight fullness in the region of the thyroid The heart lungs and abdomen were normal No skin lesion was present at the time of the examination The pulse was 84 The blood pressure was systolic 110 diastolic 70 pulse 40 Her weight was 96 pounds (43.5 kg), height 5 feet 5½ inches (153.6 cm), the standard weight being 132 pounds (59.9 kg)

Urinalysis revealed specific gravity 1.020, albumin, 0, sugar 0 indican 0, the microscopic examination was negative

The hemoglobin was 80, red cells 3,754,000, white cells 13,200 polymorphonuclears 62 per cent, small lymphocytes, 24 per cent large lymphocytes 12 per cent, eosinophils, 1 per cent basophils 1 per cent no malaria There was no occult blood in the feces, and microscopic examination was negative The Wassermann reaction was negative The blood sugar at noon, when the patient was fasting was 0.056

Gastric analysis, fractional revealed

Total acidity	12	30	40	52	55
Free hydrochloric acid	0	12	25	45	45

On roentgen ray examination the heart and lungs were seen to be normal Gastro intestinal examination showed the stomach 3 inches below the umbilicus, there were no filling defects there was normal motility and no stasis in twenty-four hours

No pathologic diagnosis was made The functional diagnosis was hyperinsulinism hyperchlorhydria and visceroptosis

The etiologic factors were heredity and overwork

Treatment and Result—The treatment consisted in hyperalimentation, including a pint of milk every three hours. There have been no symptoms since the increase in the diet.

CASE 5—History—R M, a white man, aged 59, a manufacturer, married with four children, three of whom were living, seen March 6 1924, complained of an uncomfortable feeling in the stomach and a gnawing sensation and said that at times it felt like a vacuum. Taking food relieved this sensation for about two hours, solid food giving a longer period of relief. Three or four hours after meals the distress came on again. He suffered from weakness and constipation. He was in the habit of eating fruits before retiring.

His mother, who was alive, aged 84, had apoplexy, his father died of erysipelas.

He had always been rather a large eater, eating rapidly, the diet consisted largely of meats, eggs, vegetables and carbohydrates. He had used tobacco excessively, but no alcohol.

The patient had had the usual diseases of childhood, with mild bronchitis nearly all his life. In 1887 he had malaria and a nervous breakdown, using morphin for eighteen months. In 1874 he had spinal meningitis with a good recovery. In 1884 he had gallbladder trouble and gallstone colic five times each year until 1904. In 1907 he had a fall with an injury to the lower part of the spine, which crippled him for three years.

Two years before he had a distressed feeling in the stomach associated with slight pain. The indigestion became worse so that for nine months he lived on a strict diet, but he did not improve very much. For the past two months he had been eating liberally and had not felt any worse. He now complained of a distressed, empty feeling in the epigastrium in a circumscribed area of 5 inches, coming on from two to three hours after meals, he was nearly always relieved by eating or taking soda, which caused an expulsion of gas. He felt all right when lying down. He was nauseated occasionally. He had gas and fulness and constipation. He was weak and had lost 34 pounds (15.4 kg) in two years.

Examination—The patient had pterygium of both eyes, many bridges in the mouth and gum irritation, small cryptic embedded tonsils, the thyroid was normal. The heart and the lungs were normal, except for an accentuated aortic sound, with tenderness above and below the umbilicus. The pulse was 72, the blood pressure was systolic, 220, diastolic, 115, pulse, 105. His weight was 151 pounds (68.5 kg), height, 5 feet, 8 inches (172.7 cm), the standard weight being 162 pounds (73.5 kg).

Urinalysis revealed specific gravity, 1.025, albumin negative, sugar, negative, indican, a trace, bile, a trace, a few pus cells, no casts.

The hemoglobin was 80, red cells 4,056,000, white cells, 8,200, polymorphonuclears, 62 per cent, small lymphocytes, 36 per cent, large lymphocytes, 1 per cent, eosinophils 1 per cent, transitionals 0.1 per cent, no malaria. There was a trace of occult blood but no parasites, in the feces. The Wassermann reaction was negative, the blood sugar when the patient was fasting at 11 a. m. was 0.067, and 1 p. m., two hours after eating, 0.077.

Fractional examination of the gastric contents after an Ewald test breakfast revealed

Total acidity	25	40	60	50
Free hydrochloric acid	20	25	30	20

A roentgen-ray examination of the heart and the lungs showed them apparently normal. A gastro-intestinal tract examination showed a slight filling defect in the duodenal bulb near the pyloric ring and a hypertonic stomach 2 inches below the umbilicus. There was no six-hour residue. After twenty-five hours the barium meal occupied the colon from the cecum to the splenic flexure. The appendix was not seen.

The pathologic diagnosis was arteriocalillary fibrosis, a suggestion of duodenal ulcer, chronic cholecystitis, probable chronic pancreatitis, chronic tonsillitis, and oral sepsis. The functional diagnosis was arterial hypertension, slight hyperchlorhydria, hyperinsulinism and intestinal toxemia. The patient was underweight 11 pounds (5 kg).

The etiologic factors were infection from the teeth and the tonsils, an excessive use of tobacco, rapid eating, an excessive diet of meat and starchy foods, and overwork.

Treatment and Result—Rest was advised and bromids, belladonna and laxatives were prescribed. Removal of the tonsils was advised. The patient lived some distance from Birmingham, and we have had no report from him.

804 Empire Building

"OPTIMAL" DIETS FOR DIABETIC PATIENTS*

RUSSELL M. WILDER, M.D.

ROCHESTER, MINN.

In 1910, Woodyatt¹ suggested, in explanation of the ketolytic action of glucose, that 1 molecule of acetoacetic acid might react with 1 molecule of alcohol or glucose and thus undergo oxidation at the expense of the simultaneous reduction of the glucose. This assumption was based on analogy with the observed behavior of ketones and alcohol when these were exposed to bright sunlight, as had been reported by Cimicic and Silber, and is in harmony with what is known of the behavior of the acetone bodies in metabolism. Although Geelmuyden² can be credited with an earlier hypothesis of intermolecular chemical reaction between the acetone bodies and glucose, Woodyatt was responsible for stimulating much of the investigation of this subject. Geelmuyden proposed a conjugation of glucose and the acetone bodies, a view with which Ringer's³ hypothesis of ten years later harmonized.

The demonstration by Shaffer,⁴ in 1921, of an in vitro analogy to the ketolytic action of glucose accelerated the recent activity in this field of study. The oxidation of glucose in alkaline solution by hydrogen peroxid was found to remove acetoacetic acid if the latter was present in the solution. Fructose and glycerol exerted the same effect, but lactic acid did not. The ketolytic action increased with alkalinity and temperature, suggesting that dissociation of the glucose into some more reactive derivative was essential to the reaction.

In a communication that accompanied the publication of these purely chemical investigations, Shaffer reported the results of calculations of the balance of ketogenic (fatty acid) and ketolytic (glucose) molecules in various human subjects who, by reason of fasting, fat feeding or diabetes, were excreting acetone, and concluded that the molecular ratio of ketogenic to ketolytic substances must be 1:1 or less, in order to avoid ketonuria.

A few months later, Woodyatt⁵ published his paper, "Objects and Method of Diet Adjustment in Diabetes," in which he proposed that diets for diabetic patients should be adjusted in carbohydrate, protein and fat to make the ratio in grams of fatty acids to glucose 1:5:1.

* From the Division of Medicine, Mayo Clinic.

† Read before the Section on Practice of Medicine at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

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2. Geelmuyden, H. C. Ueber den Acetongehalt der Organe an Coma diabeticum. *Verstorbener* nebst Beiträgen zur Theorie des Acetonstoffwechsels. *Ztschr. f. Physiol. Chem.* 41: 128-152, 1904.

3. Ringer, A. I. Theory of Diabetes with Consideration of the Probable Mechanism of Anti-Ketogenesis and the Cause of Acidosis. *J. Biol. Chem.* 17: 107-119, 1914.

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(FA/G=1.5) By this ratio, he expressed in grams the same proportion of ketogenic to ketolytic substances as was indicated by Shaffer's molecular ratio of 1:1. He used the term "optimal diets" to describe such appropriately balanced food mixtures, and, working with diabetic patients under conditions in which the proportion of foodstuffs in the diets probably corresponded with those actually engaging in metabolism, he observed that acetone appeared with considerable frequency when the gram ratio of 1.5:1 was exceeded. Woodyatt's discussion of the theory of properly balanced diets was logical and clear, attracting widespread attention, and, since its publication, his formulas for calculating "optimal diets" have been adopted in many clinics, and a large number of clinicians, including McCann,⁶ Evans,⁷ Richardson,⁸ and very recently McCrudden,⁹ have accepted the ketogenic-antiketogenic molecular ratio 1:1 (Woodyatt's gram ratio FA/G=1.5) as representing the upper limit of safety in fat feeding.

However, Woodyatt himself was not insistent on the inviolability of his figure 1.5, and left the question of the actual ketogenic threshold open for further study. His purpose was more to expound the general principles involved in properly balanced diets for diabetic patients, and thus he accomplished so effectively that the subject has become one of general interest to the profession at large. Actually, small excretions of acetone may occur even when proportionately more glucose is being burned than the Woodyatt ratio allows, on the other hand, diets with relatively less carbohydrate than those proposed by Woodyatt may be used without provoking a ketosis of clinical significance. Proportionately higher fat diets than Woodyatt's may even control a preexisting ketosis.

Zeller's¹⁰ experiments, in 1914, frequently quoted of late, suggested, as Lusk pointed out, that acetone formation is prevented so long as a molecular ratio of 2:1 is not exceeded, which, expressed in grams, as in Woodyatt's formula, would be a ratio of 3:1. In 1920, Ladd and Palmer¹¹ reported similar observations. Petren's¹² diets of almost pure butter fat often controlled preexisting ketosis instead of intensifying acetone production, and the same was true of the very high fat mixtures of Newburgh and Marsh.¹³ It could be maintained, however, that these observations were made without adequate control of the total metabolism of the subjects, and that some of the foods were stored so that the proportions of fatty acid and glucose actually metabolizing when these high fat diets were ingested were not those of the diets. These objections were met by Wilder,

Boothby and Beeler,¹⁴ and by Wilder and Winter¹⁵ in 1921. In a series of metabolism experiments on both diabetic and nondiabetic subjects, precautions were observed so that the proportion of foodstuffs actually burning could be calculated with reasonable reliability. Insignificant ketosis was provoked when the ketogenic molecules in the metabolizing mixture were twice as numerous as the glucose molecules. Also preexisting ketosis was controlled when the molecular ratio was approximately 2:1. On this basis, we concluded that the ratio between ketogenic and glucose molecules at the threshold of ketogenesis was 2:1, and so reported it at the 1921 meeting of the American Society of Biological Chemistry. Shaffer,⁴ in the meantime, as a result of further chemical and clinical studies, had revised his original conclusion as to the ratio, and at the same meeting stated that "each molecule of glucose was shown to be ketolytic for two molecules of acetoacetic acid."

As our conclusions were in harmony with Shaffer's revised ratio, a scheme of dietary management was proposed¹⁶ which, while based on the principles enunciated by Woodyatt, differed from his "optimal diets" in several respects. The foodstuffs were proportioned so that the ratio of ketogenic to glucose molecules would be about 1.7:1 (FA/G=2.5). This was somewhat below the threshold ratio of 2:1, but considerably above the molecular ratio of 1:1 (FA/G=1.5). Greater emphasis was placed on the importance of gauging the total calories to be fed by the metabolism of the patient, and it was proposed that the estimation of the number of calories required by the patient for maintenance be determined from Du Bois' standards of normal metabolism based on surface area in relation to age and sex. When the patient is up and about an appropriate increase in food is made to meet the estimated muscular exertions of the patient. Feeding in excess of this is luxury, which in all probability is harmful, and feeding less than maintenance requirements will invalidate the calculations of the proportions of ketogenic and ketolytic substances, since any difference will be made up by the consumption of body fat. Reasonable protein restriction was also included in the plan. This is in harmony with the practice of Petren and that of Newburgh and Marsh, and is abundantly justified by our own experimental observations.

In order to simplify the calculations involved in solving formulas, charts were prepared which are easily manipulated, so that, if a patient's height, weight, age and sex are known, the total number of calories for maintenance at rest, and the distribution of these between carbohydrate, protein and fat can be read at a glance. This chart was placed in the hands of the dietitian, and the patients in St. Mary's Hospital were placed on their basal diet the morning after admission. This system was introduced during the summer of 1921. Since then, many more than 500 patients have been treated in this manner, and we have yet to see serious acidosis that could be attributed to the diet.

As the result of this large experience, we are convinced that rigid carbohydrate restriction and relatively high fat feeding are entirely safe for the "well diabetic," if a patient who is free from severe infections and other acute complications may be thus characterized. It has

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16 Wilder R. M. Optimal Food Mixtures for Diabetic Patients, *J. A. M. A.* 78: 1878-1884 (June 17) 1922.

17 Du Bois Delafield and Du Bois F. F. Clinical Calorimetry, A Formula to Estimate the Approximate Surface Area if Height and Weight Be Known, *Arch. Int. Med.* 17: 863-871 (June) 1916.

never seemed wise to employ such diets when there was infection, and I have hesitated to use them when there was a preexisting severe diabetic acidosis. In the case of a few patients who have been the subjects of special investigation, a preexisting acidosis has been controlled by this dietary procedure, but my general impression is that such conditions are treated more effectively by temporary underfeeding and small doses of carbohydrate.

Recently, additional experimental evidence has been obtained in support of the belief in the general safety of high fat diets. In cooperation with Boothby and K. Sundtord, a prolonged metabolism study is being conducted, with a "well diabetic" as the subject. Observations of the respiratory metabolism and of all the pertinent changes in the urine and blood have been continued for five months, and since the subject has returned weight and nitrogen equilibrium, the total metabolism is known and the ketogenic-antiketogenic ratio can be calculated with much greater accuracy, we believe, than ratios based on respiratory quotients obtained in short experiments, such as those reported by Richardson.⁸ For certain periods of the experiment, the molecular ratio has been as high as 3:1, and with this ratio on occasions, acetonuria has equaled what it should be by Shaffer's calculations—20 gm daily when expressed as hydroxybutyric acid. Yet this ketosis has not been accompanied by acidosis, the alkali reserve remaining normal, and the patient has felt perfectly well all the time. There has been nothing unusual in this diet from the standpoint of mineral acid or base content, and insulin has not been used. The ammonia excretions have been approximately 4 gm daily and, therefore, theoretically sufficient to neutralize the acetone bodies as formed. The diets were purposely planned to provoke ketosis, being very low in carbohydrate (15 gm or less) and very high in fat. When less than 5 gm of carbohydrate was fed, the excessive fat became nauseating, and such diets could not be maintained for more than twelve days. It would seem, however, that only a very small amount of fresh green vegetables would be necessary to protect against the fat intoxication described by Allen.¹⁸

The significance of the results obtained thus far is twofold. First, the fact that the yields of hydroxybutyric acid agree so well with the excretion predicted by Shaffer's revised method of calculation supports the opinion that the molecular ketogenic threshold ratio actually is 2:1. Second, the fact that, when the ratio is as high as 3:1 and the daily oxybutyric acid excretion is 20 gm, no actual acidosis develops, indicates that when the ratio is held below 2:1 as in our clinical diets, a considerable margin of safety is secured. Incidentally, the blood sugar of this patient, which was as high as 275 mg for each 100 cc before these studies commenced, remained at a normal level, between 87 and 113 mg, during months of excessive fat feeding, and the basal metabolic rate remained continuously at a normal level during long periods of ketosis.

These experiments with extremely high fat diets, revealing as they do that a molecular ketogenic ratio of 3:1 may be borne without inconvenience, suggested that the development of diabetic coma must involve extreme limitation of the ability of the organism to utilize glucose, and that such depressions of glucose tolerance are not likely to be provoked by excessive fat feeding. It has been my experience, in fact, that diabetic acidosis

and coma arise either from an acute complication such as an infection, or from a dietary indiscretion, usually in the consumption of carbohydrate (candy) or protein, rarely of fat. The serious case of Bessie B., reported from our clinic,¹⁴ is an illustration: the patient twice developed a true acidosis and symptoms of impending coma when her metabolism was stimulated by a high calory diet containing 3 gm protein for each kilogram of body weight, while diets higher in fat but lower in protein were tolerated much more satisfactorily. Such observations are in complete harmony with the experience of Petren and with that of Ladd and Palmer. The conclusion as to the comparative harmlessness of high fat diets is furthermore supported by the recent work of the nutritional biologists. Frank,¹⁹ of Leipzig, Osborne and Mendel,²⁰ and Smith and Carey²¹ have independently reared white rats to normal maturity on diets containing from 80 to 85 per cent of fat calories and minimal amounts of carbohydrate. Smith and Carey's results were the least satisfactory, Osborne and Mendel's the best. Osborne and Mendel conclude that the carbohydrate required for the metabolism of rats and for the development of energy in muscular contractions can be furnished endogenously throughout the period of growth.

The term "optimal," as applied to appropriately balanced, high fat, low carbohydrate diets, serviceable as it has been in directing attention to the principles involved in preventing ketosis, has unfortunately carried the implication that such diets are necessary and best for the treatment of all types and conditions of diabetes. I have already indicated, but wish to reiterate, that it is of doubtful wisdom to use such diets for a patient who has an acute complication or a preexisting severe acidosis. My associates and I have previously furnished evidence that even mild infections favor acetone formation, and suggested that the threshold of ketosis may be lowered by complications. For this reason it is our practice to feed less fat and proportionately more carbohydrate under such circumstances, or to resort temporarily to a fast, broken only by small doses of orange juice. Fortunately, the introduction of insulin has relieved us from depending on dietetic and other less specific measures in these serious conditions.

Furthermore, insulin now obviates the former necessity of continuous rigid carbohydrate restriction, such as we heretofore advocated. We still employ diets based on an estimated basal metabolism and apportioned on a molecular ketogenic ratio of 1:7:1 (FA/G:gm ratio 2:5) with 0.66 gm of protein for each kilogram of body weight, but we now use such diets only for controlling glycosuria and determining tolerance. Later, we deviate from this regimen, and in planning the patient's work diet, provide more calories, more protein, and more carbohydrate as follows:

DIETARY PLAN

When a patient is admitted to the hospital, he is seen at once by the house officer, and if there is no acute complication the routine management is instituted without delay. The patient is kept in bed, and is immediately started on the optimal diet as calculated by our diet card. He fasts on the fourth day, and then resumes the diet for four days, quantitative determinations being

18 Allen, F. M. Experimental Studies in Diabetes. Series V, Acidosis 2. Fat Intoxication. *J. Metabol. Res.* 3: 797-813, 1923.

19 Frank, O. Tierexperimentale Untersuchungen über Fetternährung. *Monatsschr. f. Kinderh.* 24: 487-492, 1923.

20 Osborne, T. B. and Mendel, L. B. Carbohydrate Deficient Diets. *J. Biol. Chem.* 59: 13-32, 1924.

21 Smith, A. H. and Carey, E. Growth on Diets High in Carbohydrate and High in Fat. *J. Biol. Chem.* 58: 425-433 (Dec.) 1923.

made daily of the sugar and nitrogen in the urine. If the case is not severe and the patient becomes sugar-free on or before the fast day, extra carbohydrate, such as white bread, is given during these four days to insure some glycosuria. The dietetic and laboratory data now provide a measure of the patient's tolerance, the average daily glucose excretion subtracted from the glucose value of the metabolizing foodstuffs represents the grams of sugar the patient utilizes under these standard conditions. The glucose value of the foods metabolized is calculated by adding the carbohydrate grams fed, 10 per cent of the fat grams fed, and the sugar derivable theoretically from protein catabolism. This proteidic sugar is obtained by multiplying the grams of urinary nitrogen by the factor 3.7, rather than by taking 58 per cent of the protein grams fed, since many diabetic patients have a negative nitrogen balance, when they present themselves for treatment, and catabolize more protein than is included in the diet. When the tolerance is thus determined, the larger diet necessary for working conditions, together with the necessary insulin dosage, can be planned with considerable precision, allowing 1 unit of insulin for every 2 gm of glucose derivable from the extra food in the larger diet.

I believe that, if insulin is to mean anything at all to farmers and working people, it must provide them with the strength necessary to continue at their usual gainful occupations. Therefore, the patient's occupation must receive consideration in determining the number of calories he is to receive at home. For a person leading a sedentary life, an increase in calories of 30 per cent over the basal requirement will often be sufficient, in the case of the farmer, the increase must be as much as 60 or 80 per cent. In the work diet we allow 1 gm of protein for each kilogram of body weight, and enough carbohydrate to give the diet a total glucose value of from 100 to 120 gm.

We are now treating certain early, mild cases of the acute progressive type of diabetes by this rigid dietary plan, and administering insulin. This acute progressive type of diabetes Falta²² calls the malignant type. With it increasing severity is to be anticipated and, if possible, prevented. In mild, nonprogressive cases, particularly in the vascular and obesity types of diabetes, such rigid management and insulin are not indicated. "Optimal" diets are neither necessary nor best for such patients, except temporarily for the quick control of a glycosuria resulting from gross dietary indiscretion. These patients do not require insulin, and rigid dietary restriction often works an unnecessary hardship. It is frequently possible in benign cases to obtain satisfactory results with diets that the patient selects at will, observing only abstinence from sweets and appropriate limitation of meats, fish and breadstuffs, thus avoiding the inconvenience of calculating and weighing food. It is important, in advising patients with the mild type of the disease, to emphasize the limitation of protein as well as carbohydrate.

CONCLUSIONS

1 Small amounts of acetone may be excreted by diabetic patients when the ratio between ketogenic molecules (fatty acids) and ketolytic molecules (glucose) in the food mixture metabolizing is below 2:1. Under such conditions, however, the daily excretion of acetone bodies, while sufficient for the urine to react in a weakly positive manner with sodium nitroprussid or ferric chlorid, seldom exceeds 1 gm. This is, therefore,

clinically unimportant. Such small excretions may be obtained when the molecular ratio is below 1:1 (Wood-yatt's $FA/G = 1.5$). When the molecular ratio 2:1 is exceeded, severe ketonuria rapidly develops. The threshold of ketogenesis is, therefore, indicated by the molecular ratio 2:1, which, translated into the gravimetric expression, would be $FA/G = 3$.

2 It is improper to assume that the diet represents the food mixture metabolizing unless it is constructed to conform closely with the minimal caloric requirement of the patient. If the food calories are in excess of this requirement, certain substances may escape immediate oxidation, and, vice versa, if the food calories are inadequate, the deficiency is met by food materials, chiefly fat, withdrawn from the tissues. Diets containing 0.66 gm of protein for each kilogram of the patient's weight, and adjusted to the patient's caloric need and proportioned so that the molecular ketogenic ratio is 1.7:1, have been given to more than 500 patients with uncomplicated diabetes, without once provoking serious acidosis.

3 The factor of safety in carbohydrate restriction and high fat feeding is greater than was formerly considered possible, because the organism may adjust itself to a considerable ketosis and avoid actual acidosis. This it does mainly by neutralizing the acetone acids with ammonia.

4 In the presence of acute complications, the ketogenic threshold may be lowered, and it is wise, under such circumstances, to feed more carbohydrate and less fat.

5 Although the introduction of insulin has obviated the necessity for very rigid carbohydrate restriction, the consideration of the ketogenic ratio of diets, as first recommended by Woodyatt, is of great value in planning suitable regimens for patients requiring insulin.

6 Neither the rigidity of the diet nor the administration of insulin should be in excess of the needs of the individual patient.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. JOSLIN, HARRIS AND WILDER

PROF. KARL PETTER, Lund, Sweden. There is one point in the problem that Dr. Joslin has brought up which I would like to emphasize, and that is the importance of giving only a small amount of insulin. I visited the Toronto workers, a few days ago, and McLeod demonstrated how the effect of insulin becomes less and less per unit as the amount of insulin is increased. The point is that the effect of a small amount of insulin per unit can be twenty times as great as a greater amount. Therefore, we must try always to keep to the smallest possible amount. As to the question of the greater frequency of diabetes, I have a different impression from the clinical one, and so I am a little skeptical, but, certainly, if diabetic patients are living to a greater age, one is right in saying that there are more diabetic patients. But the grounds on which we are basing statistics must be accurate, and we should take a long time before coming to a conclusion as to the frequency of the disease. Patients have changed in regard to age and to severity of cases. People now go to a physician to find out whether they have the disease or not, but my impression is that the frequency is about the same as before. I believe that other diseases must be studied in comparison to understand the influence of diet in this disease. I believe that severe diabetes must be considered as having a hereditary element, the units of mendelian factors having a bearing on this question as they do in hereditary diseases of the nervous system, for example, in such diseases as heredo-spastic paralysis, Friedreich's ataxia, or heredo-familial idiocy. These are due to the amount of vitality of the units of Mendel: the patient reaches

²² Falta, W. Die Mehlfruchtkekur bei Diabetes mellitus. Berlin Urban und Schwarzenberg, 1920, p. 149.

a certain age and the vitality is not enough in certain respects, therefore, disease gains ground. In this case, the islands of Langerhans have not enough vitality, so that when the patient reaches a certain age the disease appears.

DR W M BOOTHBY, Rochester, Minn. Dr Harris draws the conclusion that hyperinsulinism may be the forerunner of diabetes just as hyperthyroidism is sometimes the forerunner of myxedema. I was much interested in Dr Harris' opinion in regard to the possibility of hyperinsulinism, on the other hand, the analogy was rather unfortunate in regard to hyperthyroidism and myxedema, as we have had under observation 100 carefully studied cases of myxedema, and in not a single instance had hyperthyroidism or exophthalmic goiter preceded the myxedematous condition. One of the main points in Dr Wilder's paper is the correction of the misunderstanding in regard to the term "optimal diet." It is unfortunate that this phrase carried with it the implication that all patients should be restricted to a high fat diet based on a keto-antiketogenic ratio. This is not the case, and it is well to emphasize once more that not all patients should be put on the so called "optimal diet."

DR DON DUFFIE, Central Lake, Mich. Dr Wilder has mentioned his desire to have patients eat what they like, so far as possible. The patients enthusiastically applaud. We have devised a little mechanical system for making this more possible. We call it the diabetic slide rule. It works with our patients. It is not patented, you might like it. It makes a dietitian out of any one, regardless of education, in five minutes' time. The patient selects his entire menu to suit himself, yet easily arrives at the almost exact number of grams of protein, fat and carbohydrate assigned by his physician. It enlists his interest, and sustains his attention in the weighing of food. He comes to feel that he is running the thing, sees method in your madness, becomes cooperative instead of antagonistic. The whole idea of diabetes begins to be tangible to him. He gets interested in the books. The slide rule has three slides, showing grams of protein, fat and carbohydrate, respectively. Then, there are a series of cards. Each card represents one serving of food. One, say is 30 gm of oatmeal. There are three slots in the card. The length of these slots is proportionate to the grams of protein, etc., in that serving of food. The slots in the cards are what move the slides in the rule, making an adding machine of it. The physician has set certain marks on the rule, for the patient's daily totals. The patient selects cards of food he would like to eat then proceeds to see how closely they hit the marks. He may think he will take potato. He quickly sees why he cannot take much of that—nothing about carbohydrate—it merely has too long a "C" slot. But he sees why he can have lots of vegetables, for those cards have such tiny little "C" slots they never would fill up the space. He notes that the mark on the fat column is set at a high figure. To arrive at this mark, it is evident to him that he will need some cards having long "F" slots, such as the one labeled "cream 4 ounces." And so, instead of a bewildering puzzle, bristling with unknown words, the diet becomes a simple card game, literally child's play. They like it.

DR SEALE HARRIS, Birmingham, Ala. Dr Boothby's observation that hyperthyroidism may not be a precursor of hypothyroidism is not borne out by the observations of others. I recently looked up the literature on the transition from hyperthyroidism to hypothyroidism, and found frequent mention of the change. As to the etiology of hyperinsulinism, I think that, in some cases, it is due to a chronic pancreatitis resulting from infections of various kinds, just as diabetes or hypoinsulinism is probably due to infection of the pancreas in the large proportion of cases. The infection may come from tonsils or teeth, and I think frequently from the colon. As to syphilis we did not have any positive Wassermann reaction in the group of patients that we think had symptoms of hyperinsulinism. I think that the prevention of diabetes is largely a dietary matter. I believe that it is a question of the quality as well as the quantity of the food, a deficiency of vitamins as compared to the diet of twenty-five years ago. This is the case not only in diabetes but also in all abdominal diseases. McCarrison, in his work in the Himalayas, showed that intestinal

stasis and colitis were a frequent cause of abdominal infections, and the work of MacCollum would seem to show that vitamin deficiency plays a large part in lowering resistance to infections of the pancreas and all other organs of the body. In regard to hyperinsulinism being a precursor of obesity and diabetes, in hyperinsulinism there is a hypoglycemia with hunger reaction, and that causes the patient to eat an increased amount of food which adds to the work of the pancreas and exhausts the cells of the islands of Langerhans. The excessive use of any organ or gland is followed by deficiency of secretion in the gland for short or long periods of time.

DR R C LOGEFEIL, Minneapolis. What do you consider the optimal blood sugar reading? Do you depend on the blood sugar estimations or on the clinical findings in judging hyperinsulinism?

DR SEALE HARRIS. Nearly all of the twelve cases in which the blood sugar was below 0.07 showed symptoms analogous to the syndrome resulting from an overdose of insulin. In making the diagnosis of hyperinsulinism, we consider both the symptoms and the hypoglycemia. The optimal blood sugar reading is from 80 to 120 mg of sugar to 100 cc of blood or, expressed in percentages, the optimal blood sugar readings range from 0.080 to 0.120.

DR S B MCKERRIHAN, Portsmouth, Ohio. In the last four or five years it would seem that people have been eating more candy and also consuming large quantities of products made from sugar, such as soft drinks and confectionery.

DR RUSSELL WILDER, Rochester, Minn. I should like to congratulate the inventor of the 'diabetic slide rule', I think this is a very ingenious method of instructing the patient and getting his cooperation. It is always difficult to give a dietary prescription in terms of actual food and I think that this rule should prove a most useful aid. Eppinger has suggested the possibility that hyperpancreatism may explain some cases of exogenous obesity. I do not think that the evidence is conclusive, but I am very much interested in Dr Harris' observations.

DR ELIOTT P JOSLIN, Boston. I believe that the reason for the diabetic tendency of the Jews is that they take too much food and too little exercise. I do not think that it is a question of the kind of food. In China diabetes is not common, and these people use a preponderance of starchy diet. In Japan, more sugar is eaten and diabetes is more common. However, I do not think that it is so much the kind of food as it is the amount of food. If we prevent a gain in weight we shall accomplish more. Treatment of diabetes is simple and easy in the country town and can be carried out if the physician will take pains. Any measure or contrivance that will simplify treatment is to be welcomed. My patients average only ten days in the hospital and then go outside Boston. They go to small towns and to the physicians in those towns. In that way they get along very well, but I should welcome statistics from other sources for comparison. The stay in the hospital influences the type of diet we prescribe for our patients. Professor Petren can keep his patients for weeks and months, so that he can give a certain diet. Newburgh and Marsh also keep patients under observation for a long time, and may partly account for their similar system. This is less the case at the Mayo Clinic with Dr Wilder's patients, still less at the Peter Bent Brigham Hospital, with those of Dr Fitz and perhaps least of all at the New England Deaconess Hospital, Boston. Since our patients average only ten days, we must treat them conservatively. Therefore, we cannot afford to give them a high diet. I am content that the cases I have had under observation with insulin treatment for a year and a half have gained 15 per cent. I think that that is enough. Overfeeding the normal person predisposes to diabetes, overfeeding the diabetic patient predisposes to coma. Dr Woodratt has explained the manner in which more fat can be given safely than formerly. This has added two years to the lives of our patients. One must give as much carbohydrate as one can and as much fat as one needs for weight while keeping the patient sugar free giving at the same time enough (1 gm per kilogram of body weight, more or less) protein for nitrogenous equilibrium.

THE TRAUMATIC NEUROSIS*

MILTON B. LENNON, M.D.

SAN FRANCISCO

A study of a series of industrial and nonindustrial accident patients presenting the symptoms of a post-traumatic neurosis shows the small part that trauma plays in such a condition.

When the individuals of this group are carefully studied, other facts are discovered that are vastly more important than the injury. Indirectly, this is proved by the great number of people who have sustained severe injury and who present no late neurotic symptoms. On the other hand, a trifling physical injury with no concomitant shock may be followed by a most deplorable psychic state. In short, there must be some peculiarity of the individual that causes him to react in an uncommon way after a greater or lesser injury.

This is borne out by an increasing experience with patients who have been so classified. When one is able to obtain an eminently satisfactory history from the patient, his early life, his problems and difficulties in his social sphere, his reaction to his environment, his attitude toward work, and above all an insight into his sexual life, there will always be found a man or woman who is decidedly neurotic.

In a group of forty-one patients who had been either under compensation or who had obtained final judgment in court procedures, this fact was always in evidence. Inquiry long after judgment was rendered and the patient had returned to work showed that, fundamentally, they were unchanged.

The group is necessarily small, because it is difficult to get a satisfactory history from all such patients. Nearly all of them claim that they were never sick prior to their injury. Physical findings may absolutely belie their statements. A social welfare worker may bring forth a host of facts that indicate the type with which we are dealing. Kindness and the expenditure of much time will usually lead the man to tell of his troubles and problems. In some instances, this history was obtained long after the man had returned to work. In short, it is profitable to follow the traumatized neurotic over as many years as possible, and get a full life story.

However, the patient is not the only factor. If others did not act, he would invariably recover from his injury without any severe neurotic reaction.

The fact of injury gives him time for reflection. He perhaps has worked long and hard. A common point with all such patients is their boastfulness of good work and uncommon achievement. In all, there is a desire for rest and relaxation. Necessity, however, has goaded them on to work. The injury gives an opportunity to be temporarily free. It does more than that; it evokes the sympathy of the wife and family, something perhaps denied the man for a long time. Finances become low, matters are discussed with family and friends, and the period of resentment now arises. A lawyer is ready to offer his services, and he does all he can to make the man feel that he has a just cause and should demand damages.

In the meantime, some physician has been in attendance. He stresses the trauma, he perhaps has given a lot of ill advised treatment, he lets his sympathy run away with his judgment and later appears as a witness on behalf of the man. Unhappily, he may even know

and recognize the condition, and by stressing half truths make it appear that the injury was the *sine qua non* in the neurotic state.

By this time, the patient becomes obsessed by the desire to collect damages. The fact that a commission may ultimately give less than he could earn while the case is pending is rarely considered. Of the cases that come to court, the same can be said. Meanwhile, he develops a more and more injured air. Repeated examinations, the appearance before the court and commissions keep him upset, deprive him of sleep, and sway him between hope and fear.

During this time, it is utterly futile to try to treat him. He is not fighting for health but for a reward. When work is offered to him at his former place of employment, he stoutly maintains that he cannot work, yet he expends an immense amount of energy in attending hearings, finding witnesses and working up the endless details of his suit. He may even work elsewhere and justify it in his own mind. Or he may feel that working for himself is not really working, since it carries no direct payment. For example, an engineer did not feel that he could look after a boiler. He was able, however, to put in a long row of fence posts about his ranch. Another shingled his house. A Portuguese who had been at my office, complaining of weakness in his left arm, was driven by a social worker to another consultant. On leaving, a flat tire confronted them. The man quickly offered to change it and did so, forgetful of his arm. A man who had suffered a most severe electric shock and head concussion was supposed to be recuperating in the country, when he was working as a mate on a Standard Oil Company vessel. There was no doubt about his being a profound neurotic and a most fanciful liar. A giant of a fellow was able to run a ranch, ride a horse over rough country and go deer hunting, despite his claim of disability.

I do not adduce these few examples to show that these patients were pretenders. When their entire history is viewed, it is plain that they are not. These very acts indicate the peculiarities of their make-up.

The pertinent question is how to help such patients.

With excellent welfare workers, much can be done to keep traumatized neurotics from developing a long train of symptoms. The man who is known as a trouble maker, the one who has domestic difficulties, the complaining types, the more or less unstable characters, should have the immediate aid of a neurologist when they are injured. An alert surgeon learns to measure such men, and will do all he can to avert the legal and social factors that lead to distressing sequelae. If the wife is seen early and given every assurance that her husband will recover and be returned to work at the first possible moment, if, better still, her cooperation is obtained, the man has no chance to develop a disabling neurosis. This method has served admirably at the Bethlehem corporation ship-building plant in San Francisco. In more than 6,000 accident patients, only five came before the industrial accident commission for final settlement. This is less than 0.1 per cent of the total number. One of these five should have been avoided. The man had an ulnar injury, with the formation of a neuroma. This was removed, and he was turned over to a physiotherapist. After ten months, I saw him with a well recovered ulnar function, but with a glove anesthesia and a contracture of the extensors of the forearm. He did not belong in the usual category, since he was doing work all the time and reporting only to the physiotherapist. He was not, like others, under direct medical supervision.

* Read before the Section on Nervous and Mental Diseases at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

He was one of four who developed active symptoms of hysteria after injudicious physiotherapy. Unfortunately, not all patients are watched as closely as the Bethlehem employees. As a rule, the neurologist is consulted after a considerable period of time has elapsed, after casts have been applied, massage given, violet rays exploited, and every other conceivable means of suggesting disability has been used. His chief function is to make a diagnosis. He may be asked to treat the patient, and may make a futile attempt. If he is fortunate in getting a patient at a time when the interest of the family has subsided, and the wife is vigorously demanding that her husband get back to work, he may succeed. This is the rare exception.

It has been the experience of neurologists that the sense of disability terminates soon after damages are paid. The sooner this is done, the better. Unfortunately, it takes industrial commissions a long time to see the value of this procedure. Were they guided by a neurologic commission on the diagnosis, and a bulk sum equivalent to two months of compensation paid the patient, the matter could be quickly settled. After his return to work, further treatment might be offered to the patient. Few ever present themselves when such an offer is made. As far as they are concerned, the episode is closed.

Four patients were injured a second time. It seemed to be uppermost in their minds that the commission would pay little attention to their complaints. No sympathy was accorded them at home, their incapacity lasted from a few days to a few weeks.

One wonders why we still continue to use the term traumatic neurosis.

In court cases, it gives the lawyer an opportunity to convey to the jury an idea that is absolutely at variance with commonly accepted medical opinion.

The term compensation neurosis is more appropriate but it too has its limitations. It stresses the fact, however, that compensation quickly terminates the period of idleness of the traumatized neurotic.

Fitzhugh Building

ABSTRACT OF DISCUSSION

DR DAVID S. BOOTH, St. Louis. This subject is doubly important to the physician first, because of its scientific medical interest, and secondly, for his own personal safety. Every owner of an automobile is a potential defendant in a personal injury case. Furthermore, the average insurance does not cover the average amount of damages awarded in these cases. So I think that physicians should give a great deal more attention to this subject than they have been giving it, and they should be more careful in their testimony in these cases. We have too many pseudo-experts who obtain their knowledge from books which are largely traditional and contain such dangerous teaching as that "traumatic neurosthena is a serious and disabling condition," not even distinguishing between the different degrees of neurosthena. Cases of neurosthena of traumatic origin are certainly responsive to treatment and the experience of years on the part of those who have had most opportunity to observe a large number of damage cases conclusively proves that these patients do recover very soon, at times disgracefully so, as I sometimes say in my reports on these cases after compensation is allowed. Another point that has been brought to my attention in recent years is that these claimants soon dissipate their award and are almost objects of charity. Prevention is I think, the mainstay in these cases. One should make a thorough and complete examination, after which one is in a position to give a positive diagnosis and prognosis. In regard to the industrial commission, I must say that the members of these commissions often have a more practical knowledge of these cases than does the average medical

witness. The important thing is that they be not influenced in their decisions.

DR P. H. HOURIGAN, Buffalo. It is interesting how prevalent in this country is the idea expressed in regard to peculiarities developed in injured people. Last Friday I was invited by the Industrial Commission of the State of New York to attend a conference in New York City and at that meeting Dr. Albee gave expression to about the same sentiments as those of Dr. Lennon. Dr. Albee called such cases attacks of "compensitis" which apparently from the reaction of those present was considered rather fitting. Yet after injuries we do see every imaginable variable from the mental, moral, social, economic normal—traumatic neurosis or pseudo-hysterical phenomena or whatever neurologists label them—when we are prone to feel that patients are malingerers or are developing "compensitis." We who are connected with corporations, as I am, believe that we are not justified in feeling that these people are malingerers but rather that there is some real problem. After exhausting every possible advice and assistance to no avail, we may feel justified in being, not positive but inclined to the belief that the case is possibly one of malingering. One such person could not walk up the church steps, but the next Sunday, after a \$5,000 settlement had been made, he ran up the church steps. While patients get well after settlement and, strangely, get well rather rapidly I feel that we should be slow in deciding that the individual is a malingerer.

DR WILLIAM A. JONES, Minneapolis. Until very recently I was out of court work for some time because I became convinced that it was a difficult problem to get a real straightforward honest opinion in the majority of these personal injury cases. My belief is that the patients who are really injured receive compensation early and those that fall into the hands of the compensation lawyer recover very slowly until compensation is received. In spite of the fact that the injury may be severe, such as a basal fracture these people get well or at least get back to what they were originally. And this, I believe is Dr. Lennon's important point—that in studying these people carefully we obtain a real view of their own life of their method of thinking and in the majority of instances they fall under the head of inferiority cases. The awarding of compensation, however certainly is the best method of treatment. They get back to a joyous state with a bit of money, and they make substantial improvement. So far I have not been very much impressed with the efforts of the Industrial Commission of Minnesota. Doubtless it settles many cases that would otherwise be brought into court but very often it falls short of its actual duty in bringing the case up at once fixing the settlement and paying it off. It lingers, just as does the compensation attorney. It hesitates because its members are politically appointed or affiliated with civic government, for that reason dragging the case along until it becomes really a serious problem for the patient. It is important of course to educate juries. Unless some good straight facts are hammered into them, they are usually in sympathy with the patient, usually they award more than the necessary damages and they forget altogether that these patients frequently recover after compensation has been issued. Then, too we are up against the same old problem of the interested expert. He can see more in an injury than the average neurologist can see in a lifetime and he testifies according to his interests, for his attorney because he is working on a compensation basis himself. I think the old plan that was tried out in Denmark the most successful. When a man was injured he was promptly paid a stipulated sum and told to go to work, that he could have no more. And if in this country we could devise some such method for settlement with these unfortunate people and have less of them appearing in court and before industrial commissions it would be a good thing for all concerned.

DR HUGH T. PATRICK, Chicago. This whole thing has been thrashed out these last twenty-five or thirty years. This situation was also handled in Germany, but it was badly done there, in fact scandalously so in some cases. The law there perpetuated these cases year after year. I have

seen written expert opinions (*Gutachten*) stacked 6 inches high on one case, the patient having been in half a dozen hospitals under prolonged observation and in numberless dispensaries. I was interested to note a sort of international experiment on these patients in going from Germany to France. In Germany there were hundreds of thousands of disabled traumatized neurotics. In France there was no compensation for functional disorder and consequently in all of so-called neurotic France there were scarcely any of these traumatic neuroses.

DR MEYER SOLOMON, Chicago. It seems to me that there are various factors to consider after an injury, particularly to a neurotic individual. Has an organic structural change resulted? Occasionally that does happen. Is there a functional, fatigue nervous disorder due to the trauma, not definitely with destructive organic change and not due to pure emotion? Is there an emotional condition causing reaction to the situation? What role does pure suggestion play? What degree of exaggeration is present? What degree of pure simulation is present? These are the factors to consider in each case that we see. We should individualize in each case, have an open mind, and evaluate these various factors in each and every case. In the average case of trauma it is not difficult definitely to exclude organic disease as a result of the accident. It is always best no doubt, to settle the case immediately, but I do not believe that even in the pure neurosis cases it has been definitely proved that in all cases immediate settlement brings about disappearance of the symptoms. In some cases that is not true, and although it may clear up most and in many cases all of the symptoms, there are some cases in which the symptoms do persist. However, as has been brought out by the author, until the case has been settled, the physician treating it is in a peculiar position since he has not the whole-hearted cooperation of the patient and of the family, and without the sincere desire and the earnest cooperation of the patient one cannot expect him to get well. But even after the case has been settled we may still have to handle it for a varying period, depending on the particular patient, and it is often as we know, necessary to treat the family as well as the patient. It seems to me that in the average case coming before us after an injury we ought to investigate all findings and attempt to determine whether an organic change has taken place following the trauma, and consider all the elements entering into the case before making a decision.

DR JOHN LEEMING, Chicago. I was very much taken with the title of the paper. On thinking about the matter it occurred to me that there are many people injured who are not neurotic, and I wondered whether, in referring only to traumatized neurotic patients, the author had in mind that the patient is not necessarily neurotic as a result of the trauma, but that he was neurotic before the injury. My experience in industrial board work and in nonindustrial cases is that the question as to whether the individual who is injured was previously neurotic has a great deal to do with the prognosis in these cases. Compensation, which is a very valuable means of cure in certain cases, is not so valuable in two types of patients: first, if the injured person was neurotic, and, second, when the injury has resulted in actual structural disease, in other words, when there is a real injury instead of an alleged injury. In industrial board cases a prior condition of neurosis is an unfortunate and difficult question to handle because an injury that will not produce a definite and given effect purely as result of the trauma in a healthy person may possibly arouse some latent preexisting tendency and cause prolonged disability not on account of the injury but on account of the underlying defect. It is for this reason that many corporations in this city have gone to great extremes in having their employees examined to exclude persons with these underlying defects recognizing, as does our industrial commission here that if we aggravate the preexisting condition we are just as liable for the condition as if we had caused it. In one special case in which I was interested, I shall never forget the finding of the commission which was something to this effect: The condition existing here was undoubtedly caused or aggravated by the injury. The defense that it may have existed previously or that the man was

predisposed to it has no bearing on the disability, because the corporation which employed him either knew of his preexisting defect, or, if not, it was their business to have discovered it. In other words, it had no bearing on the disability, either they knew it or should have known it, and corporations are going to considerable length in examining men and excluding those who are predisposed to trouble. As to automobiles, we have no choice. We are liable to injure either a person predisposed to neurosis or a sound man. If he is a sound man, an honest man, compensation will often have a very beneficial effect, but if he is predisposed to neurosis, he will keep on suffering from the effects of the injury for an unlimited time.

DR LESSER KAUFFMAN, Buffalo. We must not forget that many persons, whether they are primarily neurotic or become neurotic through the effect of injury, nevertheless do not recover even after settlement. All of us have seen such cases. There are certain neurotic persons made so by law, that is, the manner in which cases are handled in court undoubtedly aggravates the symptoms. In New York State, when an action is brought two or three years elapse before the case comes to trial. It can readily be seen that a person with little money, whose friends or shyster lawyers advise him what to do, may be deleteriously affected by undue delay. If we had some means of trying these cases early, the matter could be settled without undue strain on the neurotic litigant. In regard to the matter of experts, unfortunately, we are all human and when called into a case we may think we are right in favoring the side in which we are most interested. If we had for our experts competent, disinterested neurologists, employed and paid by the state, to determine the actual status of the patient, this would be a much better solution of the problem than the way it is handled at present.

DR MILTON B. LENNON, San Francisco. In California we had a commission that I think was rather an excellent one. During the course of many years we had practically the same men serving on that commission. Recently there has been a change of mentalities because of the fact that we have a new governor and a new commission. In the course of years, the first commission had become fairly well trained. Different members of it were able to recognize a neurotic individual or a so-called traumatic neurosis, therefore the commission was able to settle cases with a certain degree of justice. Now we have a new commission, and if that commission is so fortunate as to serve ten or twelve years, we may again have a well trained commission. I particularly tried to show that if we carefully study patients over an extended period of time, eliciting every factor possible in their life history, we shall find that practically all of them were of the neurotic type and make-up. I endeavored to show that if patients who are recognized as nervous types were seen early and all the usual extraneous factors that make for disability were eliminated, we should then have a lessened number of patients coming up for final adjustment.

Migraine.—So far as the clinical picture of typical migraine is concerned, the main features were well recognized several hundred years ago. Aretaeus of Cappadocia, in the second century A. D., was the first to distinguish migraine from other forms of headache by drawing attention to its unilateral and paroxysmal character. Caelius Aurelianus (400 A. D.) described some of the visual symptoms and Alexander Trallianus (600 A. D.) the disturbances in gastric function, but it was not until 1725 that Vater drew attention to the characteristic hemianopia, and fifty years later that Mirabeau, whilst in prison at Vincennes, wrote the first of the long series of graphic descriptions of the visual phenomena, for which the medical profession is indebted to lay victims of migraine. Dr. Edward Liveing, later the distinguished librarian of the Royal College of Physicians of London, collected all that was known of migraine in a remarkable volume published in 1872 and in the fifty years which have elapsed since then very little of importance has been added to our knowledge of its symptoms.—Arthur F. Hurst. The Savill Lecture, *Lancet* 2:1 (July 5) 1924.

SPECTROSCOPIC AND CHEMICAL DEMONSTRATIONS OF OCCULT BLOOD IN THE FECES*

CHARLES D. AARON, M.D.

Professor of Gastro-Enterology and Dietetics, Detroit College of Medicine and Surgery
DETROIT

The finding of occult blood in the feces, when hemorrhage from the nose, mouth, throat, esophagus and hemorrhoids can be eliminated, is of the highest importance in the diagnosis of ulceration of the digestive tract. In conjunction with certain clinical symptoms, occult blood may be looked on as pathognomonic of ulcerating lesions of the stomach or the intestine. Moreover, in cases of gastric ulcer, occult blood in the feces is a most important objective symptom, for it not only clinches the diagnosis, but also indicates whether or not the ulcer is healing. During the treatment, a negative test for occult blood implies that the therapy is effective. The finding of occult blood is also the earliest and surest objective symptom in cases of carcinoma of the digestive tract. Bleeding from a carcinoma can be differentiated from bleeding from an ordinary ulcer by the fact that, in ulcer, the bleeding may stop, as shown by a negative test, while in carcinoma the bleeding is continuous and the test for occult blood is always positive. Since the finding of occult blood in the feces is so helpful in diagnosis, we require a technic that is at once simple, exact, and absolutely reliable.

Boas first used the term "occult blood" in 1901, and pointed out the diagnostic value of the test in cases of ulceration of the digestive tract. Various modifications of the original method of examination of the feces for occult blood have been made, to be highly praised at first, and then attacked, justly or unjustly, until all of them came to be looked on as unreliable. These various methods of occult blood testing may be divided into the spectroscopic and the chemical. The important point in any and all of them is that the preparations and instruments used must all be scrupulously clean.

The older spectroscopic tests were rather unsatisfactory, both because they were lacking in delicacy, and because the practitioner possessed neither the requisite training and experience nor the necessary appliances. Snapper's reaction,¹ however, is a superior method, the results of which are as reliable as those of the best chemical tests. The feces are placed in a mortar, and extracted with acetone. This withdraws much of the coloring matter and water, leaving a dry mass that is quite susceptible to spectroscopic analysis. The dry residue is transferred to a clean mortar and rubbed up thoroughly with a mixture of one part of glacial acetic acid and three parts of ether, preferably ethyl acetate. After filtration, a quarter-volume of pyridin is added, then a drop of ammonium sulphid solution. This is examined spectroscopically. If blood is present, a hemochromogen spectrum band will be found on the boundary between yellow and green. The Snapper method is rather too complicated for the ordinary practitioner, and for this reason a good chemical method is usually to be preferred.

The chemical tests for occult blood in the feces are in general, named after the reagent used in making them, hence we have the guaiac, the aloin, the benzidin

and other tests. The oldest of these tests is the guaiac, and among these Weber's test occupies the first place. It is done in the following manner: Ten grams of feces is stirred up thoroughly in a mortar with 5 c.c. of water and 5 c.c. of glacial acetic acid. The mixture is poured into a test tube, and 10 c.c. of ether is added. The tube is shaken up and down. Then 1 c.c. of the ether mixture is pipetted off and mixed with an equal quantity of a 2 per cent solution of guaiac resin, another 1 c.c. of the specimen is mixed with 1 c.c. of a 0.2 per cent solution of guaiac resin, and still another 1 c.c. with a 0.02 per cent solution; all three mixtures are dissolved in equal parts of alcohol and oil of turpentine. The solution assumes a purple color if blood is present. The different concentrations of guaiac are necessary, since one cannot foresee how much blood the feces may contain. The great objection to the test is that less than 10 per cent of blood in the feces will not give a positive reaction. The original Weber test is no longer considered practical.

Two important modifications of it have been made. First, the Boas chloral-alcohol-guaiac method. One gram of feces is mixed with 10 c.c. of a 70 per cent solution of chloral hydrate in 96 per cent alcohol and 1 c.c. of glacial acetic acid. The mixture is filtered. To 1 c.c. of the filtrate is added 1 c.c. of a 2 per cent solution of guaiac resin in equal parts of the chloral hydrate solution and hydrogen dioxide 3 per cent solution. A bluish color indicates a positive reaction.

Kuttner and Gutmann describe the second modification. Eight grams of feces is stirred up with acetone, the latter is poured off, and the residue is treated with 5 c.c. of glacial acetic acid and 10 c.c. of 7 per cent sodium chlorid solution. This mixture is extracted with ether. The ether is poured off and a few drops of glacial acetic acid is added. This extract is then used as in the original guaiac test.

The aloin test is similar to Weber's, but a 2 per cent alcoholic solution of aloin, to which turpentine has been added, takes the place of the guaiac solution. It gives a positive reaction with a minimum of 5 per cent of blood in the feces, the specimen becoming red.

The pyramidon test is much used in France at present. A small portion of the feces to be tested is stirred up in from 3 to 4 c.c. of distilled water and filtered. To the filtrate, 3 or 4 c.c. of a 90 per cent alcoholic solution of pyramidon is added and also several drops of 30 per cent acetic acid with hydrogen peroxid. A violet blue is proof of the presence of occult blood. Thevenon and Rolland, the first to recommend this test, believe that it is as delicate as the phenolphthalein test, but Koopman, who has thoroughly studied it, rejects it because he frequently obtained positive reactions in feces known to contain no pathologic blood.

Boas' phenolphthalein test is done in the following manner. One gram of feces is stirred up in a mortar with 5 or 6 drops of glacial acetic acid and 10 c.c. of alcohol. This is filtered and the filtrate poured on a mixture of 15 drops of Boas' phenolphthalein reagent,² 5 drops of hydrogen peroxid solution (3 per cent) and 2 c.c. of alcohol. A red coloring denotes a positive reaction.

Boas' thymophthalein test. One gram of feces is stirred up with 10 c.c. of alcohol and 10 drops of glacial acetic acid. To 30 drops of the filtrate of this mixture 20 drops of Boas' thymolin reagent³ is added, with 15

* Read before the Section on Pathology and Physiology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

¹ Snapper I. Arch. f. Verdauungskr. 1921 No. 3 p. 178.

² One gram of phenolphthalein, 25 gm. of potassium hydrate, 100 c.c. of water and 10 gm. of zinc powder.

³ One gram of thymophthalein, 25 gm. of potassium hydroxid, 100 c.c. of water and 10 gm. of zinc powder.

drops of hydrogen peroxid solution (3 per cent) If the reaction is positive, a blue color will appear

The benzidin test, of which there are several modifications, seems to be the favorite chemical test. It is extremely important, however, that the reagent be absolutely pure, otherwise the results cannot be depended on. Moreover, benzidin in an ether solution should be avoided, because in such tests the ether combines with benzidin and hydrogen peroxid, resulting in blue combinations which are mistaken for blood.

Benzidin was first recommended by O. and R. Adler. The benzidin test is based on the principle that the easy oxydasis of the colorless benzidin, by means of the oxygen from the added hydrogen peroxid, results in a higher oxidized combination which is green or blue. Hydrogen peroxid will not allow its free oxygen to act except in the presence of blood-coloring pigment.

Among the benzidin tests, the Schlesinger-Holst modification does not always give a reliable reaction, since the boiling of the feces for the destruction of enzymes interferes to a considerable degree with the delicacy of the reaction.

The Wagner test is as follows. One gram of feces is smeared on a glass slide, and to this is added a few drops of the following mixture: a small particle of benzidin in 2 c.c. of glacial acetic acid and 20 drops of hydrogen peroxid (3 per cent solution). This test is simple, but it is not always reliable, as it does not always yield a negative result in cases in which there is known to be no occult blood present.

In 1915, Dudley Roberts⁴ of Brooklyn recommended a benzidin triturate tablet composed of one part of benzidin to 20 parts of sodium perborate triturated. The test consists in placing in a small dish enough of the specimen "to wet the tablet without immersing it completely," and adding a drop or two of glacial acetic acid, which will at once bring out a greenish blue if there is any blood present. In case the percentage of blood is small, only the edge of the tablet will be found to change color. This test has proved very satisfactory.

Emphasis has been placed repeatedly on the delicacy of the several benzidin tests. Yet there is such a thing as too great a delicacy, for blood in very small quantities is found physiologically, not necessarily pathologically, in the feces. Now the reagent for practical purposes must be such that it will reveal the latter, and not the former. In order to evaluate the reagent properly, Gregersen of Copenhagen made a great many experimental tests, and finally came to the conclusion that anything less than from $\frac{1}{30}$ to $\frac{1}{200}$ per cent of blood in the feces could not be considered pathologic. He discovered that concentrated solutions of benzidin were altogether too delicate, and that a weak solution (1 or 0.5 per cent) would yield better results. In Gregersen's long series of investigations, he added 1 gm. of blood duly to the meatless diet of persons who were otherwise giving a negative reaction.

In my personal observation, the Gregersen test gives the best results, and combines exactness, reliability and simplicity. Other tests call for an extract of the feces, while this test is applied to the feces directly.

Five years ago, Gregersen⁵ made the very important observation that all benzidin tests depend on the concentration of the benzidin solution. To insure a definite percentage of benzidin in every test, he recommends a powder consisting of 0.025 gm. of benzidin and 0.20 gm. of barium peroxid, to be kept in well stoppered

When the reagent is wanted, one powder is dissolved in 5 c.c. of a 50 per cent solution of acetic acid, this gives a 0.5 per cent benzidin solution. Boas now recommends the Gregersen modification, and, for convenience, has had Merck prepare a small tablet containing 0.025 gm. of benzidin and 0.10 gm. of barium peroxid, to be dissolved in 5 c.c. of 50 per cent acetic acid solution. It is needless to say that here, as in all other tests, the instruments must be scrupulously clean, and should be used for no other reactions.

Not only must the patient partake of neither meat nor fish for three or four days prior to an occult blood test, but certain vegetables, such as French fried potatoes, are to be denied him at this time. Gregersen himself stoutly maintains that chlorophyll-containing vegetables themselves do not simulate positive reactions, but that any such positive reactions are due to utensils used in the preparation of the vegetables, while nearly all other authorities blame the vegetables themselves.

Gregersen has tried thoroughly the effect of his benzidin test on a variety of the commonest foodstuffs, such as bread, butter and cheese, without ever obtaining positive reactions. Adler,⁶ in experimenting with 0.5 per cent solution and also with concentrated solution of benzidin, found that, in most cases of meatless foods, such as barley, farina, rice, puree of peas, potatoes, carrots, beets, cabbage or asparagus, also white of egg, yolk, butter and substitutes, bread, sugar, etc., the results were negative. Even spinach, so often considered as simulating blood in the feces, in repeated tests gave negative results, only once did blood coloring result, and it was probably due to the meat extract used in preparing the spinach.

For the Gregersen modification of the benzidin test, one needs only a small quantity of the feces, which is smeared on a microscopic glass slide. This small particle may be procured from the central part of a fecal mass, thus avoiding any accidental admixture of blood from anus or genitals. Moreover, the necessary particle being so small, it may easily be transported and kept until a convenient time for making the test. As the feces are homogeneous in composition, any particle will be typical of the whole. If the particle has dried up, it should be dampened with a little water, and the benzidin reagent should then be added.

This benzidin reagent must be prepared fresh for every test, as the solution will not keep for more than half an hour, and it must also contain the definite required concentration. Powdered benzidin will keep indefinitely when mixed with barium peroxid as stated above. The reagent is easily prepared by placing the powder in a glass beaker into which 5 c.c. of a 50 per cent solution of acetic acid has been poured. When the barium peroxid is dissolved in the acetic acid, hydrogen peroxid is liberated. The addition of a solution of hydrogen peroxid is now unnecessary. This is all the better, since hydrogen peroxid solution will not keep, and usually evaporates even when the bottle is corked, thus spoiling the preparation.

According to Gregersen's method, one needs only two reagents, a prepared powder mixture of benzidin and barium peroxid and a 50 per cent solution of acetic acid. Both will keep separately indefinitely. The test solution is obtained by placing the benzidin-barium powder into the acetic acid. The feces are then spread on a glass slide, and from 2 to 4 drops of the benzidin-barium-peroxid-acetic acid reagent is dropped on them. If pathologic blood is present, there appears

⁴ Roberts, Dudley. A Benzidin Tablet Test for Occult Blood. J. A. M. A. 65: 244 (July 17) 1915.

⁵ Gregersen, J. P. Untersuchungen über okkulte Blut. Arch. f. Verdauungskr. 25: No. 3 1919.

⁶ Adler, E. Arch. f. Verdauungskr. 27: 153 1921.

within one minute: a greenish blue or a blue. The color is easily detected on placing the glass slide on a white background.

In order to make sure of the activity of the benzidin solution, Gregersen prepares a blood test paper. If, when a drop of the benzidin solution is placed on the paper, the latter turns deep blue, this is proof positive that the benzidin reagent is in proper condition.

The more blood there is in the feces, the more quickly will the color appear, and the darker will it be. Gregersen emphasizes that the time required for the color to appear is indicative of the quantity of blood in the feces, and he divides the positive reaction into three grades:

1 If it takes from fifteen to sixty seconds for mere greenish blue or pale blue to develop, this is called a weak positive reaction and is marked 1+. The blood content in this case is less than 1 per cent.

2 If it takes from three to fifteen seconds and the coloring is deeper, the reaction is definitely positive and is marked 2+. Here we have from 1 to 5 per cent of blood.

3 When the change appears almost instantly and is deep blue, almost black, the reaction is strongly positive and is marked 3+. More than 5 per cent of blood is indicated.

The blood percentage is, of course, very important, and a series of benzidin tests will reveal whether the hemorrhages are increasing or decreasing. Thus the Gregersen benzidin test, when properly made, does away with the coarser tests, which give a positive reaction only when the blood percentage is large, and since it registers in three grades, as described above, it makes unnecessary subsequent and more delicate alcoholic tests. Boas⁷ nevertheless suggests that when, in doubtful cases, the Gregersen test is found negative, we can control the reaction by means of the chloral-alcohol-guaiac test, as described in the first part of this paper, but I agree with him in saying that for all practical purposes the Gregersen test may be considered sufficiently reliable.

The Gregersen test is of greater practical value than any other test for occult blood in the feces. Its advantages are:

1 The proper 0.5 per cent concentration of the benzidin reagent possesses the required delicacy and indicates the quantity of blood in the feces.

2 The test solution is easily prepared, the instruments used are the simplest, and the specimen of feces required is extremely small.

3 The test is simpler than any other, since it does not call for extraction of the feces.

4 Consecutive tests will prove whether the first positive reaction was due to the accidental presence of blood, or to pathologic conditions.

812 Kresge Building

ABSTRACT OF DISCUSSION

DR HENRY ALBERT RENO, Nev. What was the objection to potatoes, especially French fried potatoes?

DR CHARLES D. AARON, Detroit. Some authorities say that it is not necessary to take any vegetables away from the patient. I do not agree with this, but there are many vegetables that should not be eaten. French fried potatoes from the method of cooking are particularly undesirable. It is thought that it is not the vegetables so much as the utensils in which they are cooked that is objectionable.

⁷ Boas, I. *Arch f. Verdauung kr.* 1921 No 1 pp 39 and 60

CONGENITAL ARTERIOVENOUS FISTULA

AN EMBRYOLOGIC STUDY, WITH REPORT OF CASE *

WILLIAM FRANCIS RIENHOFF, JR., M.D.

Resident Surgeon Johns Hopkins Hospital

BALTIMORE

In 1757, William Hunter¹ described, for the first time, the clinical syndrome of arteriovenous fistula, and stated that the disease always arose traumatically as a result of transfixion, by a cutting instrument, of an artery and a vein lying close together, the apertures of these vessels subsequently becoming fused, thus permitting a mutual flow of blood between them. Later, in 1835, W. H. Porter² and others described cases in which there had been established an arteriovenous fistula by erosion of the accompanying vein, due to a pathologic process involving the artery. The former was called an acquired arteriovenous fistula, and the latter a spontaneous arteriovenous fistula. It was not until 1867, however, that Hewitt³ reported the first case of a probable congenital arteriovenous fistula existing between the right common iliac vessels, in a girl, aged 17 years.

The late Dr. Halsted,⁶ in 1918, discussed arteriovenous fistula before the American Surgical Association, and presented a case of congenital arteriovenous fistula of the neck. He made a very careful analysis of all the reported cases in the literature up to that date, and these data were later published by Callander.⁷ To quote Dr. Halsted directly, "congenital arteriovenous fistula without nevus is very rare and occurred only twice in 447 cases, while with nevus the condition was noted in six cases only." The two cases referred to by Dr. Halsted were those of Hewitt and von Eiselsberg, mentioned above.

In the Johns Hopkins Hospital, there have been the following two cases of congenital arteriovenous fistula, which have not before been reported:

CASE 5.—A youth, aged 18, about five years before admission noticed a puffing noise in the region of his right shoulder and neck. Examination revealed a large mass involving the right side of the neck and the supraclavicular region. Dilated vessels in and beneath the skin gave the appearance of earthworms. The larger veins pulsated markedly. Over this mass there was a continuous thrill and bruit.

Two operations were performed. Fistulous communications between the subclavian artery, the transversa colli artery and the overlying veins were ligated. Dilated veins were excised.

This case was undoubtedly a congenital arteriovenous fistula in which there were multiple fistulous communications, end-to-end, between the subclavian artery, the transversa colli artery and venous lakes.

* From the surgical clinic of Dr. J. M. T. Finney, Johns Hopkins Hospital.

¹ The original of this abstract will be published in the Johns Hopkins Hospital Bulletin Sept. 19, 1924.

² Read before the Section on Surgery, General and Abdominal at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

³ Owing to lack of space this article has been abbreviated for publication in THE JOURNAL by the omission of two illustrations and the reports of some of the early cases. These will be included in the author's reprints and in the Transactions of the Section.

¹ Hunter, William. The History of an Aneurysm of the Aorta with Some Remarks on Aneurysm in General. Medical Observations and Inquiries 1: 323, 1757. Further Observations upon a Particular Species of Aneurysm, ibid. 2: 390, 1762.

² Porter, W. H. Varicose Aneurysm. Cyclopedia of Anatomy and Physiology, London, 1: 242, 1835.

³ Hewitt, Prescott. A Case of Congenital Aneurysmal Varix. Lancet 1: 146, 1867.

⁶ Halsted, W. S. Congenital Arteriovenous and Lymphaticovenous Fistulae. Unique Clinical and Experimental Observations. Tr. Am. Surg. A. 1919.

⁷ Callander, C. L. Study of Arteriovenous Fistula with an Analysis of 447 Cases. Johns Hopkins Hosp. Rep. 19: 1920.

No cardiac changes were observed in this case, although the duration was at least five years and probably much longer. The fistulous communications were quite large, and the communications between the arterial and the venous systems did not seem to function in this case until the patient was about 13 years of age, when there was a sudden opening up of blood channels which had lain latent, remaining closed since birth, and which were formed undoubtedly by the persistence of vessels or communications of the primary vascular anlage in the embryo. From this time on, there was a constant and rapid growth of the tumor, as in Case 4 of Dr. Halsted, and it should be noted that in both cases there occurred the end-to-end type of anastomosis. In this type, the hydrodynamic factors, such as the direction of the blood flow and the intravascular pressures, are directly and primarily responsible for the enlargement, or apparent growth of the tumor, the distortion of the blood flow being mechanically responsible for the enlargement of the aneurysmal tumor rather than any inherent tendency to new growth occurring in the vessels themselves as no evidence of any neoplastic changes could be observed in the microscopic sections studied from either cases 4, 5 and 6. The blood vessels making up the tumor were essentially normal in appearance and structure.

CASE 6.—The second case was that of a woman, aged 35, who when 5 years old, had noticed that the right leg was larger and longer than the left. Examination showed that the right leg was 65 cm longer than the left, and that the right femoral artery was three times larger than the left. There was a systolic thrill and a continuous bruit over the right femoral and iliac arteries, and a venous engorgement of the right leg from the knee to the dorsum of the foot. The popliteal artery on the right side was greatly dilated and tortuous.

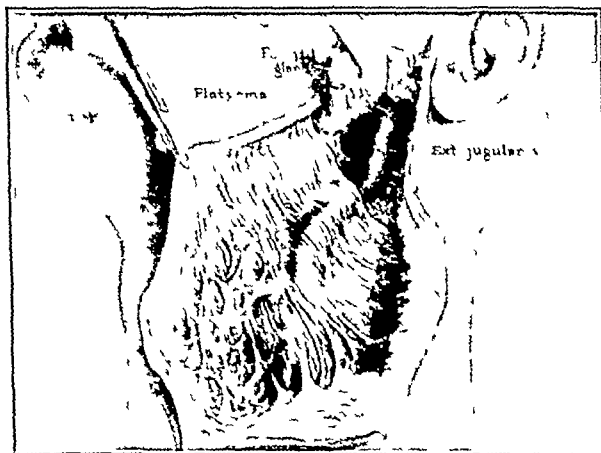


Fig. 3.—Beginning of dissection of neck. Skin flaps and parotid gland retracted.

Two operations were necessary. All the geniculate branches of the popliteal artery were ligated. The bruit was reduced by ligation of the anterior tibial artery. The popliteal artery was very thin and much dilated.

Two days after the operation, the bruit returned. Eighty-five hours after the operation, there was hemorrhage followed by gangrene, and the leg was amputated above the knee. Five branches of the anterior tibial artery ran into the tibia, into a sort of reservoir, which was drained in turn by five tributaries of the vein accompanying the artery.

The bony changes in this case prove we believe, that the vascular condition existed while the bone was still

growing, before the epiphyses had united, and therefore was probably congenital. The sinusoidal type of circulation approximates somewhat the type of embryonic circulation. It might well be called an intermediate encysted varicose aneurysm. Although of thirty-five years' duration, with large fistulous communications, there was nothing abnormal noted concerning the heart. The other characteristic vascular changes of arteriovenous fistula were, however, present. This patient was, of course, not cured.

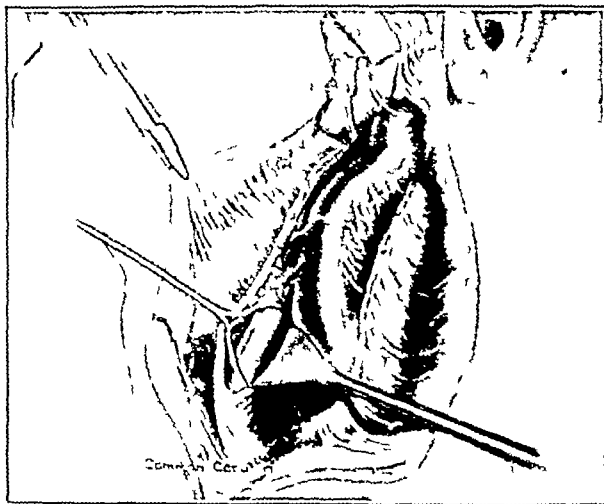


Fig. 4.—External jugular vein dissected beneath platysma. Common carotid artery exposed.

Since 1920, I have made a careful search of the literature and find that the total number of reported cases of arteriovenous fistula is more than 500. Of this number, there have been twenty-two cases of congenital aneurysmal tumors, twenty reported cases and two cases in the Johns Hopkins Hospital which have not been reported. Of these twenty-two cases, those of von Eiselsberg, Halsted and the two from the Johns Hopkins Hospital are the only ones concerning which I think I have sufficient data to classify them definitely as cases of congenital arteriovenous fistula. The other sixteen cases reported, i. e., those of Busch,⁸ Mussey,⁹ Mott,¹⁰ Norris,¹¹ J. C. Warren,¹² Cherry,¹³ Pemberton,¹⁴ J. M. Warren,¹⁵ Lee,¹⁶ Gross,¹⁷ Depres,¹⁸ Eve,¹⁹ Domainville,²⁰ Brandau,²¹ and Berry,²² have appeared in the literature under various titles—aneurysm by anastomosis, circoid aneurysm, pulsating nevus, venous tumor and congenital arteriovenous fistula—showing clearly that there seemed to exist a great deal of confusion in the minds of the authors as to the exact nature or type of the disturbed vascular mechanism.

- 8 Busch, George. *Lancet* 2, 413, 1827.
- 9 Mussey, R. D. *Am. J. M. Sc.* 5, 316, 1829.
- 10 Mott, V. *Am. J. M. Sc.* 5, 255, 1829; 7, 271, 1830.
- 11 Norris, G. W. *Am. J. M. Sc.* 5, 17, 1843.
- 12 Warren, J. C. *Am. J. M. Sc.* 11, 286, 1846.
- 13 Cherry, E. D. *New Orleans M. & S. J.* 16, 672, 1859.
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Of particular interest were the cases of Busch, Case 7, Lee, Case 11, and Eve, Case 14. Owing to the fact that this paper is only an abstract of the original, I have been unable to discuss the remainder of the sixteen cases, all of which are notable for their extraordinary clinical pictures and manifold interests.

Case 7, reported by George Busch, was probably one of congenital tumor, made up chiefly of arterial vessels. No mention is made of proximal dilatation of the arteries or veins, or other evidence of an arteriovenous anastomosis. There was a pulsating tumor, the size of a pigeon's egg, on the right side of the temple, which had been present since birth. The entire aneurysm was excised, and a permanent cure resulted. The tumor was composed of many small anastomosing arteries.

The case of Frederick Eve, in 1880, was a so-called aneurysm by anastomosis on the ear in a woman, aged 21. The tumor had been early called a nevus, and had been present since birth. This grew very slowly but constantly, until it had involved the entire ear. The ear was removed, and the patient was cured. Microscopic sections of the tumor showed many arterioles of various sizes, giving off capillaries, which anastomosed and formed a close and more or less uniform network. Both the foregoing cases were undoubtedly congenital aneurysmal tumors that were arterial in origin, and not arteriovenous aneurysms.

Case 11, reported by Henry Lee, in 1867, was a case of so-called aneurysmal varix, with an enormous dilatation of the veins from the shoulder to the elbow in an adult. The axillary vein was greatly enlarged, as well as the superficial veins and the venae comites, the muscle substance was almost supplanted by a plexus of veins. The arteries were perfectly normal. There was no suggestion in any way of an arteriovenous fistula. The arteries were not enlarged, as they should have been had there been any arteriovenous anastomosis.

The patient died of typhus four years after the onset of the aneurysmal tumor. The tumor or venous aneurysm must have been congenital in origin, but had not made itself known to the patient until four years previous to his death.

These three cases demonstrate that a congenital aneurysmal tumor may be either arterial or venous in origin and, therefore, in its final composition.

REPORT OF AUTHOR'S CASE

In the hope that some light might be thrown on the etiology of this disturbed vascular mechanism, the anatomic condition to be expected and the physiologic changes involved, the following case is reported.

A J, a man, aged 20, admitted to Johns Hopkins Hospital, Jan 7, 1924, complained of a pulsating, rumbling mass in the left side of the neck. When he was 3 weeks old the parents noticed a pulsating tumor on the left side of the neck immediately below the lobe of the ear. He suffered from frequent attacks of epistaxis, shortness of breath, and slight attacks of dizziness, especially after severe exercise, excitement or pressure on the left side of the neck. The temperature was 98.2, the pulse 80, respiration, 20. The blood pressure was 120 systolic and 76 diastolic in the right and the left arm. There was a very pronounced pulsating tumor on the left side of the neck, which was immediately below and to one side of the angle of the left jaw causing the left ear to be displaced laterally with each pulsation of the tumor (Fig 1). The displacement of the ear and the pulsation of the tumor were synchronous with the cardiac systole. There was a marked buzzing thrill or machinery hum felt over the entire left side of the neck and head but with the maximal intensity over an area that was the seat of a forceful vigorous expansive pulsation. The common

carotid artery on the left side could be palpated throughout its length, and seemed to be about three times as large as on the right. Occlusion of the left common carotid by digital pressure caused a cessation of the pulsation of the aneurysmal tumor and also of the thrill that accompanied it. The pulse dropped from 20 to 30 beats a minute, while there was a definite rise in the systolic blood pressure of 20 mm, and also a rise of 20 mm in the diastolic pressure. On auscultation, there was a marked, loud rumbling to and fro and a machinery-like murmur heard over the entire left side of the head and neck, with maximal intensity over the point of greatest pulsation of the tumor.

Examination of the heart revealed that the precordium was normal in appearance, there was no bulging or heaving, sounds were clear. A soft blowing, systolic murmur was best heard at the apex and over the left margin of the heart to the base, it was not transmitted to the axilla or back. The radial pulses were equal and regular in rate, volume and rhythm, there was no collapsing quality. The abdomen was normal. The liver and spleen were not felt. Examinations of the urine and the stools were negative. The Wassermann reaction was negative. Blood examination revealed red blood cells, 5,000,000, white blood cells, 9,000, hemo-

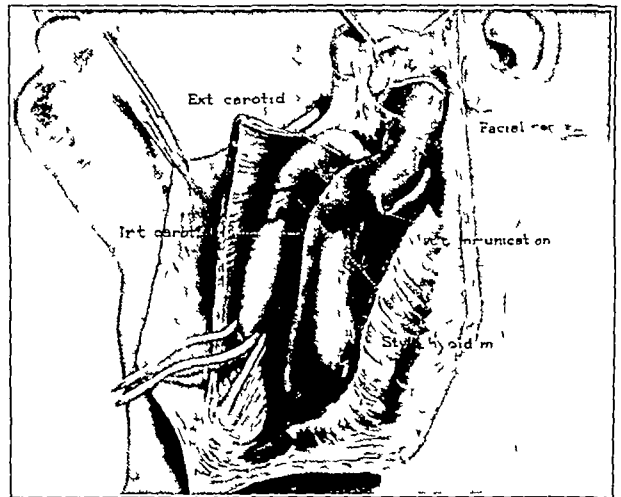


Fig 5—Common external and internal arteries dissected free first posterior fistulous communication exposed internal carotid of small size

globin, 85 per cent. The differential formula was undisturbed. An electrocardiogram was normal (Fig 2). A teleroentgenogram was normal.

Impression—Congenital arteriovenous fistula between the external carotid artery and the external jugular vein.

I operated, Jan 19, 1924. An enormously dilated, pulsating venous trunk, measuring about 4 cm in diameter, which appeared to be the external jugular vein (Figs 3 and 4), in which one could observe arterial and venous blood mixing together, was exposed. The common carotid artery was exposed and found to be greatly dilated (Fig 5). The artery measured about 3 cm in diameter. The internal carotid was very small, and the external carotid was very much dilated (Fig 6). No internal jugular vein was made out (Figs 6, 7 and 8). Eight fistulous communications were then dissected out between the external carotid artery and the anomalous external jugular vein.

The convalescence was uneventful. The thrill and bruit had entirely disappeared, the electrocardiogram and teleroentgenogram were unchanged. The blood pressure was definitely elevated for several days (between three and five), when the preoperative level was again reached by a gradual fall of the systolic and the diastolic pressures. The red blood cell count rose to 6,000,000 following the operation, but after two days a readjustment took place and the red blood cells fell to a normal level of 4,080,000, and the hemoglobin to 80 per cent.

May 1, the patient returned for observation. There was no bruit or thrill, and no roaring or rumbling in the head. The pulsations of the external carotid were definitely diminished. The electrocardiogram and teleroentgenogram were normal as before operation. The blood pressure was 120 systolic and 76 diastolic.

EXPERIMENTAL DATA

The multiplicity of the fistulous communications in this case, together with the presence of an anomalous

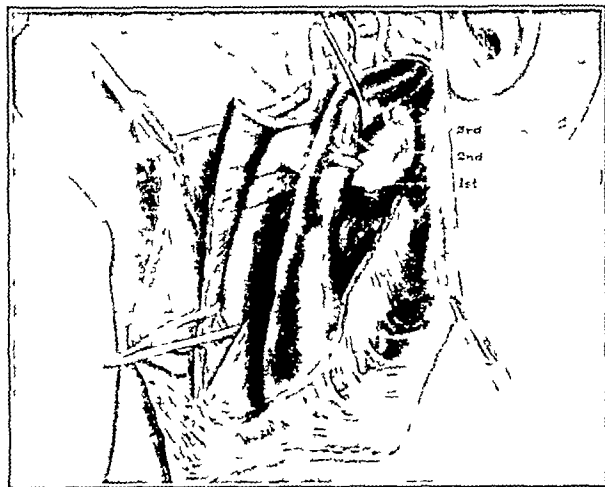


Fig 6—First second and third fistulas exposed

external jugular vein and a total absence of an internal jugular vein, at once suggested the idea that the disturbed vascular mechanism was due to the persistence of the embryonic type of circulation. A study was then made of specimens of pig embryos, from 6.5 to 20 mm in length, which were injected with India ink in the umbilical vein and cleared with the Spalteholz method, and also of the area vasculosa of living chick embryos of from one to four days' incubation. This study of the embryonic circulation was made in the hope that some explanation might be found for the presence and the persistence of embryonic communications between an artery and a vein. The area vasculosa of the chick embryos was studied by means of cutting a window in the egg shell over the blastoderm and observing directly the circulation with the microscope, either over a short period of time (from two to six hours) or aseptically for a period of several days.

In 1922, I²³ found, in working on the development of the metanephros in tissue cultures, that the anlage of the blood vascular system differentiates out in situ for each separate region of the embryo as a primary capillary network which is very rich in anastomoses and through which the flow of blood is very slow. The definitive vascular tree is then evolved from this primary capillary network by a gradual coalescence of some of the more fortuitously placed capillaries and an atrophy and disappearance of those less favorably situated. In the course of normal development the paths taken by the blood stream are, with the exception of very minor and inconsequential variations, quite definite for each region of the embryo. The cardiac impulse, as well as certain other hydrodynamic factors, plays a very important part in the determination of the definitive vascular bed, but the greatest factor is undoubtedly

the inherent tendency of certain embryonic tissues to form certain definite structures. In the tissue cultures, referred to above, we found that the vascular tree would differentiate and further develop in the normal and characteristic manner, although totally removed from the influence of the circulating blood. However, as soon as the environment in which the vascular anlage was developing was caused in any way to become detrimental to this development, there would be observed unusual and bizarre formations composed of all stages from the perfectly normal formation of capillaries to flat sheets and masses of differentiated endothelium, so that we believe it can be definitely stated that there is in the life cycle of a cell, which is differentiating or growing, a period in which the cell is very sensitive to its environment, and any injury to it at this stage will result in the abnormal growth and development of that cell or structure.

Having observed the foregoing phenomena in tissue cultures, I attempted to reproduce them in the living chick embryo. For this purpose, the area vasculosa was chosen. The flow of blood through that area, at first, is entirely arterial, away from the heart to the peripheral or marginal vein or centrifugal. There is at first a very rich anastomosing capillary communication between the large arterial trunks, but these communications diminish in an orderly sequence centrifugally, as development proceeds. The arterial trunk was very well developed before any blood was seen to be flowing back, or centripetally, except through the marginal veins. After three days, there is a transformation, and part of the capillary network assumes a venous character with a centripetal flow of blood, especially posterior and lateral to the embryo, by the formation of new connections between the original capillary network and the venous trunks, i. e., the anterior and posterior vitelline veins.



Fig 7—Anterior fistulas plainly shown also facial nerve

Thus the flow of blood is merely reversed and the capillary network, which previously served as an arterial channel, now serves as a venous channel. The development of the venous system is, from this point on, exactly similar to that described for the arterial system.

A great number of capillary communications persist between the arterial and the venous trunks, such as the omphalomesenteric artery and vein, for a number of hours after the larger vessels are fairly well formed. These communications eventually atrophy in the normal

²³ Rienhoff, W. F. Development and Growth of the Metanephros or Permanent Kidney in Chick Embryos. Bull. Johns Hopkins Hosp. 37: 392 (Nov.) 1922.

course of development Many attempts were made to cause a persistence of one or more of these capillary embryonic communications, because we felt sure that an arteriovenous fistula would result. Different methods of irritation were tried, but all were unsuccessful, except in one specimen which was being used for another experiment at that time and which was examined only as a matter of routine.

In this specimen, it was noted after the injection of three drops of typhoid filtrate into the marginal vein, that one of these capillary communications that had not yet atrophied, between the omphalomesenteric artery and vein, became much larger and took over a greater part of the blood flowing in that particular artery. The artery proximal to the fistula became enlarged and distally became smaller. The venous trunk became enlarged both proximally and distally.



Fig 8—Lateral suture of arterial wall and ligation of the remaining fistula

Whether or not this experiment can be repeated remains to be seen, and whether or not the production of the arteriovenous fistula was merely a coincidence, we do not know, but in view of the fact that other malformations and abnormal conditions could be produced in tissue cultures by irritation, it would seem to be well within the realm of possibility that an abnormal development in the living could be produced by irritation.

Disregarding the cause, it can be said with certainty that in the foregoing experiment there was produced an arteriovenous fistula due to the persistence of embryonic communications between an arterial and a venous trunk. Two other interesting facts were brought out in the study of the reaction of arteries to trauma. If the branches of an artery have been torn and have become plugged, the diameter of the parent trunk decreases in direct proportion to the number of branches obliterated. Also the reverse could be said. The diameter of an artery increases as the sum total of the diameters of its branches increases. This is the observation that I made in the experimental production of an arteriovenous fistula. In my reported case, I observed dilatation of the artery up to the most distant fistula. Also, following injury, the arterial stream would establish itself much more rapidly than the venous flow, and a noticeable engorgement of the veins and swelling of the area drained by that venous trunk would be observed to occur in the interval between the establishment of a full arterial supply and good venous drainage.

A study of the injected pig embryos revealed many communications between the internal carotid arteries and the anterior cardinal veins. Throughout the embryo, there were numerous anastomosing channels between the arterial and the venous trunks. It is quite impossible to photograph successfully these specimens, but the drawings here shown of the development of the subclavian artery and vein portray (Fig 11) very well the exact conditions that exist or occur during the development of the vascular system elsewhere in the embryo. Here are plainly shown many communications between the subclavian artery and vein, which gradually disappear as the main arterial and venous trunks define themselves. It is quite probable that there might very well be one

or many channels of communication persisting between these vessels. Also, I believe that, in the event of a persistence of these fistulous communications, as in the case reported here, it would be more than likely that the communications would be multiple, rather than that only one single communication would persist. The study of the embryonic circulation was made in the hope that some explanation might be found for the presence and persistence of embryonic communications between an artery and a vein. The observations reported here seem to prove definitely that there are many capillary communications between developing arteries and veins in the embryo which offer ample opportunity for the development of arteriovenous fistulas, also, that the persistence of these channels of communication was observed in one experiment.

SUMMARY AND COMMENT

Congenital arteriovenous fistula is a very rare condition but a definite clinical syndrome, which has been confused in the past with other congenital anomalies of the blood vascular system, such as aneurysm by anastomosis, cirroid aneurysm, nevus maternus, pulsating nevus and venous aneurysm. It would seem that there are two outstanding general types of congenital arteriovenous fistula, depending entirely on the anatomic structure of the anastomosing vessels. One type is that exemplified by the case reported here, in which there is a lateral anastomosis formed by small vessels com-



Fig 9—Induration of left parotid gland and paralysis of the left side of the face one week after operation

municating between an artery and an accompanying vein, without interrupting the continuity of either of the main vessels. In the other type there is more of a direct, or end-to-end, anastomosis between one or more arteries and a plexus of large venous sinuses in which the continuity of one or both vessels is interrupted in the formation of the anastomosis. This type of arteriovenous fistula is shown by Cases 4 and 5. Of course, there will always occur cases intermediate between these two distinct types, as Cases 3 and 6 demonstrate,

and no sharp classification will suffice to include the numerous anomalous conditions that it would be possible to have formed in the development of the blood vascular system

Nevertheless, it would seem that these cases represent two distinct types, and that other cases of congenital arteriovenous fistula will approximate one or the other

There are certain effects, both local and general, which an arteriovenous fistula has on the circulation. My case and Cases 1, 3, 4, 5 and 6 show that in every respect except one there were manifested exactly the same clinical and pathologic-physiologic findings in the congenital as in the acquired arteriovenous fistula

It will be noted in the foregoing six cases that (1) there was enormous dilatation of the artery proximal,



Fig 10—Slight keloid formation in scar three and one-half months after operation; facial paralysis has disappeared and acne is much improved

and reduction in its size distal to the fistula, (2) there was marked proximal and distal dilatation of the veins, (3) the fistulas varied in size from 0.25 to 3 cm in diameter, in all except Case 3 they were multiple, and were situated at various distances from the heart, (4) the blood pressure changes were quite pronounced when the fistulas were closed, the systolic and diastolic moving up at least 20 or 30 mm, and the pulse dropping from 20 to 30 beats a minute, (5) there was a definite hyperpnea when at rest, (6) there were infiltration and edema of the parts distal to the fistulas, together with increased growth of the epiphysis last to unite. In none of the cases, however, was there the slightest evidence of an enlargement of the heart

In going over a number of cases of other pathologic and anomalous conditions of the blood vascular system, I have found that any leak of arterial blood from the

stream bed, no matter what its cause, is productive of a systolic murmur heard best over the precordium and at the base of the heart, but not transmitted

The fact that the cases are congenital should not preclude the possibility of the necessity or ability of compensation on the part of the heart, for if the necessity was present, the heart would respond as in the cases of congenital coarctation of the aorta, a condition in which there occurs enormous hypertrophy and dilatation of the heart

In consideration of the mode of development of the blood vascular system, and in view of the fact that in one experiment an arteriovenous fistula was observed in formation, I feel that congenital arteriovenous fistula occurs as a result of a persistence of vessels or communications of the primary vascular anlage, which, failing to develop into the normal definitive vascular tree, results in the formation of anastomotic channels either directly or indirectly between otherwise normally developed arterial and venous trunks

In the foregoing series of cases and experiments a number of types of congenital aneurysmal tumor have been demonstrated, and I feel that these cases and experiments prove beyond question that a congenital blood vessel tumor may take its origin in embryonic life from the developing blood vascular tree. The type of aneurysmal tumor which shall develop depends entirely on the vessels composing it. It may be an arterial tumor, as shown in Cases 7 and 14, it may be purely venous, as evidenced by Case 11, or it may be an arteriovenous tumor, a combination of both arterial and venous constituents with anastomoses between them. They are all the result of the persistence of some part of the primary embryonic vascular anlage which has come down into adult life, and they are not at all of the nature of a neoplasm. These abnormal channels may lay latent for a number of years before opening up, and when they do become patent the type and number of anastomoses present directly determine the future course of the aneurysmal tumor. The foregoing cases demonstrate that, in an arteriovenous fistula, if the arteries run directly into the veins the enlargement of the tumor is much more rapid than when the artery and vein are connected only by small communications. The hydrodynamic factors, such as the amount, rapidity and direction of the flow of the blood, together with the intravascular tension are wholly responsible for the increase in size of the vessels and thus of the tumor. In the cases in which it was possible to study microscopic sections, there was not the slightest suggestion of a new growth of blood vessels in the sense of a neoplasm

The close association of hemangiomas with congenital arteriovenous fistulas is shown by Cases 12 and 8, and I feel that the etiology of the two conditions is the same, i. e., a persistence of the embryonic type of vascular channels. A great part of the confusion of the early authors probably arose in their inability to distinguish between arteries and veins in these arteriovenous tumors, as the veins are thicker than normal and carry arterial blood. I feel, then, an effort should be made to classify these congenital aneurysmal tumors more accurately, and this can easily be done if they are properly studied

The terms now in vogue are misleading and unintelligently used. If the congenital aneurysmal tumors are classified in regard to their etiology and the type of vessels composing them under three main headings,

such as (1) congenital venous aneurysm, (2) congenital arterial aneurysm and (3) congenital arterio-venous aneurysm, a very simple and easily understood nomenclature will be instituted. Any of these three can be modified under subheadings to suit any given case. The capillary tumors could be left under hemangiomas, cavernous and telangiectatic, as they are at present classified by our most modern pathologists. Nevus have been defined by MacCallum and others as tumors of epithelial origin containing pigmented cells called nevus cells. These may at times be somewhat vascular, but never to the extent of an aneurysmal tumor, so that it is incorrect to speak of a pulsating nevus, or refer to a hemangiomatous tumor as a nevus. Aneurysm by anastomoses and cirsoid aneurysm have been so loosely used that any number of different blood vessel tumors have been described under these headings, so that their meaning today has very little significance, and they are not satisfactorily defined in any textbook on medicine, surgery or pathology. I make this plea for the adoption of a simple definite nomenclature in order to stimulate a more careful study of these aneurysmal tumors, and also to aid in clarifying the future literature.

CONCLUSIONS

1 Congenital aneurysmal tumors may arise from either the arterial or the venous plexus of the primary vascular anlage, or there may be a combination of both arterial and venous, resulting in (1) congenital venous aneurysm, (2) congenital arterial aneurysm and (3) congenital arteriovenous aneurysm

2 Congenital arteriovenous fistula is a definite clinical syndrome consisting of two types, in one of these, the continuity of the main vessels involved is not interrupted in the formation of the anastomosis, in the other, there is an interruption of the continuity of the main vessels forming the anastomosis

3 All congenital blood vessels are due to a persistence of embryonic vascular channels, and are in no sense of the nature of a neoplasm.

4 The close association of hemangiomas and congenital arteriovenous fistulas is striking, and very suggestive that the etiology of them is the same

5 The majority of cases of congenital arteriovenous fistula will be found to have multiple fistulous communications. These may lay latent for years before opening and becoming patent.

6 The local and general effects on the blood vascular system in congenital and acquired arteriovenous fistulas are similar in all respects, with the exception that there is no evidence of cardiac enlargement in the congenital cases.

7 A systolic murmur heard over the precordium occurs in any condition in which there is a leak of blood from the arterial system, and is not an indication of cardiac dilatation or myocardial insufficiency

8 The injected pig embryos prove that the development of the blood vascular system is from a uniform capillary network or anlage rich in anastomoses, offering ample opportunity for the formation of an arterio-venous fistula

9 The persistence of one of these communications between well developed arterial and venous trunks was caused by irritation, forming a true arteriovenous fistula

10 Irritation of these endothelial elements, in vivo or in vitro, causes an abnormal development and growth

11 In the area vasculosa, capillaries, at first carrying arterial blood, become carriers of venous blood, showing that a capillary can function normally regardless of the direction of the flow of blood

12 The diameter of an artery decreases in direct proportion to the number of its branches that have been obliterated and, vice versa, increases in direct propor-

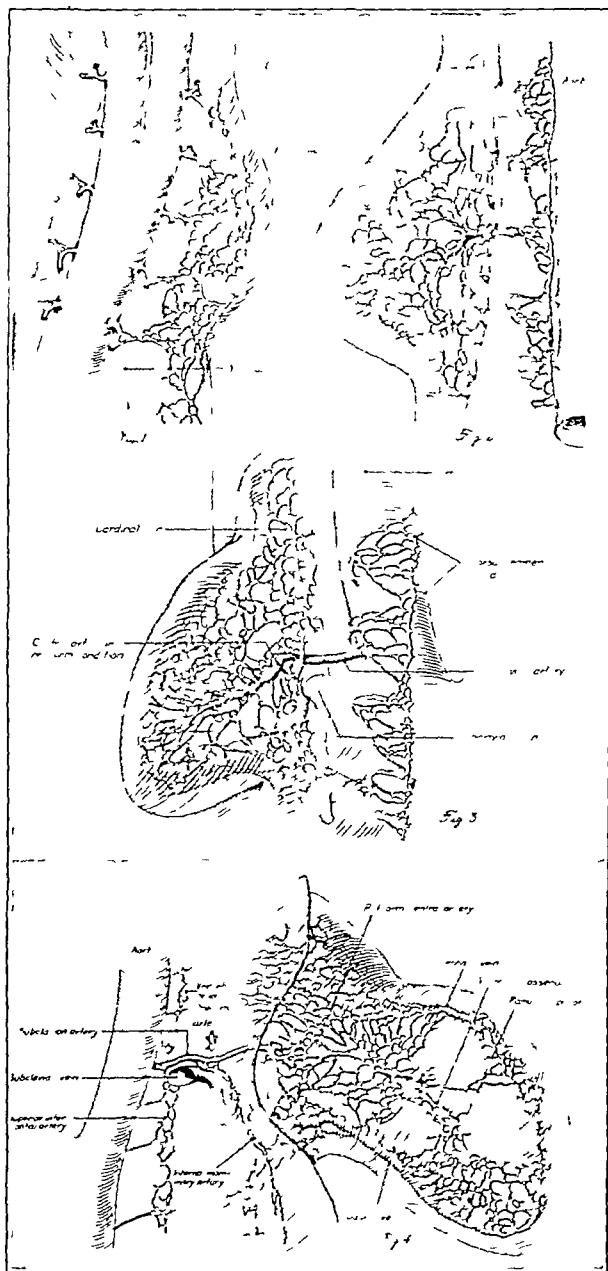


Fig 11—Development of subclavian artery and vein in pig embryo, 6.5 mm. 1. eventh segmental artery with capillary network. 2 and 3. coalescence of capillaries resulting in formation of subclavian artery and vein. persisting communications in 3 between artery and vein also shown in 4. The typical development of an artery and vein from the primary capillary network to the well formed trunk is well shown from 1 to 4.

tion to the total diameter of its branches, dilatation or diminution of the parent trunk occurring only up to the most peripheral branch affected, or, in the case of a false opening, to the most distant opening or fistula

13 Complete interruption of the arterial and venous circulation results in a reestablishment of the arterial channels and flow before that of the venous

14 I desire to suggest for the first time, I believe that a simple nomenclature, as given under Conclusion 1, should be used, discarding the confusing and inaccurate terms, such as aneurysm by anastomosis, cirroid aneurysm, venous tumor and pulsating nevus

15 I feel that complete excision of the aneurysmal tumor is absolutely necessary to effect a complete cure

16 The case herein reported is the first case in the literature of congenital arteriovenous fistula in which the patient was successfully operated on and cured by operation, the only case in which multiple fistulous communications were ever demonstrated by actually dissecting them out and exposing them at operation, and the only case in which there has been demonstrated lateral communication between an artery and a vein

ABSTRACT OF DISCUSSION

DR BARNEY BROOKS, St. Louis Dr Rienhoff's paper has called attention to the embryology of congenital arteriovenous fistula. The only congenital abnormal communications between arteries and veins that I have seen have been of the cirroid aneurysm type. I have at present under observation two instances of cirroid aneurysm of the palm of the hand. One of the patients is a woman aged 20, in whom the condition has been present since birth. The other instance is doubtfully congenital in nature. The patient is a woman, aged 60, who has noticed the pulsating tumor for a period of five years. Both these instances have all of the clinical characteristics of arteriovenous fistula.

DR W F RIENHOFF, JR, Baltimore The case concerning which I have spoken demonstrates very clearly the persistence of embryologic channels into adult life, and readily explains the etiologic factor concerned in the production of all congenital blood vascular lesions or congenital aneurysmal tumors. In these congenital cases no cardiac changes have ever been observed.

TUBERCULOSIS OF THE KNEE

THE IMPORTANCE OF DIAGNOSIS^{*}

NATHANIEL ALLISON, M.D.
BOSTON

In order to carry out any therapeutic measure with hope of success, it is essential that the exact nature of a disease process be established. In order to estimate the results of treatment of any disease process, the presence or absence of that disease process must be proved beyond question of doubt.

Much clinical confusion arises from lack of sufficient evidence on which to base a positive diagnosis. Tuberculosis of the knee joint is a diagnosis difficult to establish, especially in the early stages of the progress of the disease.

It is my purpose in this paper to point out the nature of the evidence commonly relied on in making a diagnosis of tuberculosis of the knee joint. It is also its purpose to indicate the value of establishing a positive diagnosis in tuberculosis of the knee at as early a time as is possible in the progress of the disease.

The diagnostic methods commonly in use may be divided into several groups: physical examination, history, etc., roentgen-ray photographic evidence, physio-

logic tests, blood examinations, reactions, etc., animal inoculation, and microscopic tissue examination.

It is doubtless true that, in the early stages of a tuberculous lesion of a bone or joint, diagnosis is difficult. It is doubtless true also that this difficulty is encountered in early tuberculous disease of the knee joint.

PHYSICAL EXAMINATION

Robert Jones¹ places confidence in the record of the temperature chart. He believes that subnormal morning temperature, with an evening rise to 99 F is a

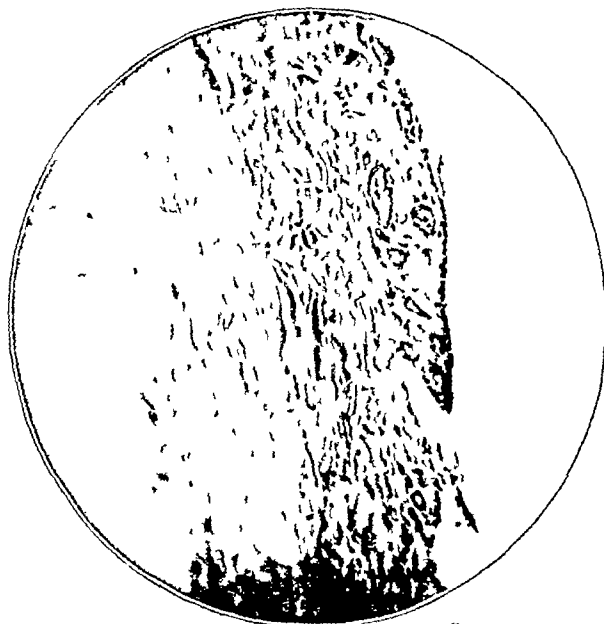


Fig 1.—Normal synovial membrane removed at necropsy from normal knee joint shortly after death. This section of the synovial membrane was taken from the lateral surface of the femur well toward the base of the lateral pouch of the knee joint. It shows the endothelial like structure of the synovial membrane, its vascularity and its irregular surface. The synovial secretion which lubricates the knee joint is secreted from this surface from the endothelial like pockets or crypts which are sometimes called "synovial glands."

positive sign of importance, a higher temperature suggests other infection. He is inclined to rely on the temperature as good evidence in cases with vague history and insidious onset, if the evening temperature is not elevated, the evidence is of some other condition, such as trauma. All other clinical signs may be identical in any one or several disease processes.

König² believes that the clinical symptoms are often insufficient, and that various forms of arthritis may present identical early stage signs. He has seen many joints presenting all the clinical signs of tuberculosis rapidly improve and completely recover after the removal of other sources of infection. "Tuberculous knee joints," says König, "do not completely recover under any form of treatment. The disease process may be arrested, but permanent changes remain in the diseased knee."

Without further review of an extensive literature of observations on the value and interpretation of clinical signs, such as pain, swelling, limping, deformity, temperature, measurements, ranges of movement limitation, muscle spasm, general appearance, family history, exposure to tuberculosis and milk supply, let it be assumed that this evidence, though highly valuable, is circumstantial in its nature. But let us also acknowl-

^{*} From the Massachusetts General Hospital.

¹ Read before the Section on Orthopedic Surgery at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

1 Jones, Robert, Practitioner, January 1913.

2 König, F., Med. Klin. No. 24, 1913.

edge that its confirmatory evidence is of great value in arriving at a final positive diagnosis.

ROENTGEN-RAY EVIDENCE

In the early period of roentgen-ray photography, much faith was placed on the interpretation of the shadows thrown by the bones on the sensitive plate in establishing a positive diagnosis of tuberculosis of the knee joint. Here again is an extensive literature which, reduced to lowest terms, may be said to depend on the following points, thus summarized recently by Walkey:³

- An x-ray diagnosis depends on
- 1 A uniform thinning of the cortex of the bone
 - 2 A condensation and broadening of the capsule
 - 3 Destruction of cartilage or thinning of cartilage
 - 4 Lack of new bone formation
 - 5 The presence of bone focus, usually in the epiphysis
 - 6 Failure of extension of the disease process in the bone along the shaft, but rather a tendency to involve the joint

These facts observed in a roentgenogram may lead to a strong belief that the disease process is tuberculosis of the knee. The evidence they supply, however, is only of a circumstantial nature. As confirmation of a positive diagnosis, these findings are, however, of great value in establishing the extent of the disease process.

It may be assumed that they are only of circumstantial value because it has been shown by several observers that tuberculosis of the bone may be accompanied by active new bone formation, the pathologic studies of Lovett and Wolbach,⁴ Cofield,⁵ and Brooks and myself⁶ on this point are convincing. Again, either syphilis or

it may be due to other infection, and it is not commonly seen in tuberculosis. Again, tuberculosis may involve large areas of the diaphysis of the bone.

Frequently, in the presence of an active tuberculous process in the knee, the roentgenogram reveals nothing. The cortex of all nonused bones becomes thinned.

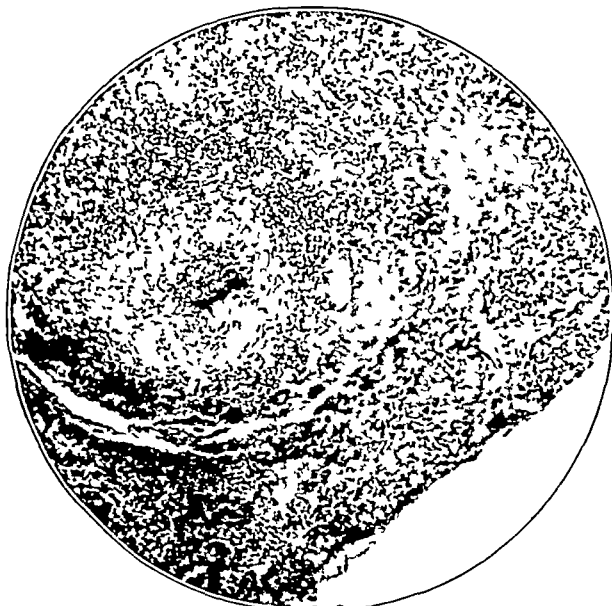


Fig 3—Section of synovial membrane removed for purpose of diagnosis. Clinical examination showed a painful swollen knee which had been causing symptoms for a period of six weeks. Roentgen ray examination revealed nothing characteristic. Microscopic examination showed an abundant wandering cell infiltration of the synovial membrane made up largely of mononuclear cells. There are occasional focal collections of epithelioid and giant cells. The histologic appearance is definitely that of tuberculosis.



Fig 2—Chronic villus arthritis. Microscopic section of synovial membrane removed at synovectomy shows perivascular cellular infiltration with many mononuclear wandering cells characteristic of a chronic inflammatory process.

gonorrhea may produce identical pictures of capsule and cartilage changes. Further, a local bone focus is really a cause for strong suspicion of tuberculosis, but

PHYSIOLOGIC TESTS FOR TUBERCULOSIS

On the value of the complement fixation tests, blood examinations and tuberculin tests, much has been written. A persistent effort has been made to determine specific tuberculous antibodies in the blood by a serologic test similar to the Wassermann test in syphilis. The method is hopeful but, as yet, there is uncertainty as to technical methods and the reliability of the antigens employed. The serologic test may never be of much value in early tuberculosis, because the antibody is not in the blood early in the disease.

It is believed by laboratory workers in this field that the serologic test, when positive, should be given more weight than when negative, and that it is of more value in prognosis and in differential diagnosis than in early diagnosis. Blood examination is of little value in making an early diagnosis of tuberculosis of the knee, and Wright's opsonic index theory has been discarded.

Among the tuberculin tests, Pirquet's test remains the best for general application. The Moro test is less accurate, and the hypodermic test is dangerous. The intradermal test is a modification of the Pirquet test, and is, perhaps, a shade more accurate. In a general way, we may assume that the results of all these methods should not be taken as positive evidence. When the test responds negatively, we are inclined to doubt the accuracy of our methods. When it responds positively, we have Pirquet's figures of 93 per cent positive tests in children of about the same age, and the average

3 Walkey, A. E. *Canad. M. A. J.* 12: 728 (Oct.) 1922.
4 Lovett, R. W. and Wolbach, S. B. *Surg. Gynec. & Obst.* 31: 111 (Aug.) 1920.
5 Cofield, R. B. *Bony Bridging in Tuberculosis of Spine*. J. A. M. A. 79: 1391 (Oct. 21) 1922.
6 Allison, Nathaniel, and Brooks, Barney. *Bone Atrophy*. Arch. Surg. 5: 499 (Nov.) 1922.

7 Allison, Nathaniel, and Brooks, Barney. *Bone Atrophy*. Surg. Gynec. & Obst. 33: 250 (Sept.) 1921.

percentage of fourteen observers who studied large series of tests as 75 per cent positive

It may be assumed that the evidence of physiologic tests is more of value when negative tests are reported than when positive tests are reported, but it is to be realized that the entire evidence is not conclusive. As some observer has remarked, "The time has not yet

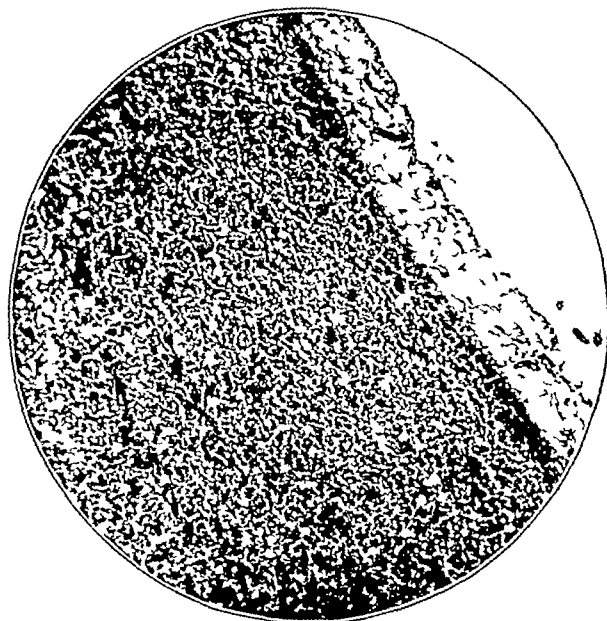


Fig 4.—Section of synovial membrane in acute gonorrheal arthritis of knee. An acute inflammatory process in the synovial membrane composed of intense wandering cell infiltration and hemorrhagic exudate

arrived when a diagnosis of tuberculosis can rest upon an easy answer to a scratch mark upon a patient's arm."

ANIMAL INOCULATION

Tissue removed from a suspected knee joint and placed in a guinea-pig, provided an accurate and painstaking technic is followed, gives us an accurate method of diagnosis. Its fruits lie wholly on the technical side, the guinea-pig must be properly cared for during the long period necessary for it to develop the disease, and the guinea-pig must be carefully studied at necropsy. This test should go hand in hand with the other accurate method of diagnosis—the examination of tissue in section with the microscope.

TISSUE EXAMINATION

A properly stained section of suspected tissue will reveal the diagnosis in 90 per cent of the cases. Here also the tissue must come from a diseased area, and the technic of cutting and staining the section must be correctly performed. Provided the tissue removed shows typical areas of tuberculosis, then the diagnosis is secured. Provided the inoculated guinea-pig shows at necropsy tuberculosis of its organs, then the diagnosis is also secured.

These two positive tests, when jointly positive, leave no doubt as to the nature of the disease process in the knee joint. By either, however, it is possible to declare a positive diagnosis of tuberculosis.

A doubt may occasionally arise in the tissue study. The microscopic picture of tuberculosis may be closely simulated by syphilis. As a rule, there is little difficulty in making a decision, but with a positive animal inoculation of tuberculosis, this doubt is removed. Wassermann's test should be done as routine in all cases of

suspected knee joint tuberculosis, to aid in clearing up possible confusion between tuberculosis and syphilis.

Gonorrheal infection presents little differential diagnostic difficulty. The circumstantial evidence is convincing and the direct evidence, that is, microscopic study of the tissue removed, shows a strikingly different picture.

It is well known that our diagnostic methods may lead us far astray unless we have the courage to establish a positive diagnosis. Many mistakes may follow the assumption that a purely clinical diagnosis of tuberculosis of the knee is possible early in the disease. It is generally admitted that the tuberculous knee gets well by becoming ankylosed. Early ankylosis is the objective of surgical treatment.

It seems unwarranted in the light of this knowledge to temporize with tuberculosis of the knee joint. The studies of end-results of many large clinics show that the result of so-called conservative treatment of tuberculosis of the knee is unsatisfactory in a high percentage of cases.

Early diagnosis and early surgical treatment offer the best chance of cure.

SUMMARY

In suspected cases of tuberculosis of the knee, that is, those in which the circumstantial evidence points definitely to tuberculosis as the disease process, operation should be performed for the purpose of establishing a positive diagnosis. Tissue should be examined and animal inoculation done. This course is justifiable because the disease process, where it exists, will more or less completely destroy the knee, and will act as a menace to the life and limb of the person diseased.

A Wassermann test should be a routine procedure in the study of the etiology of knee joint disease.

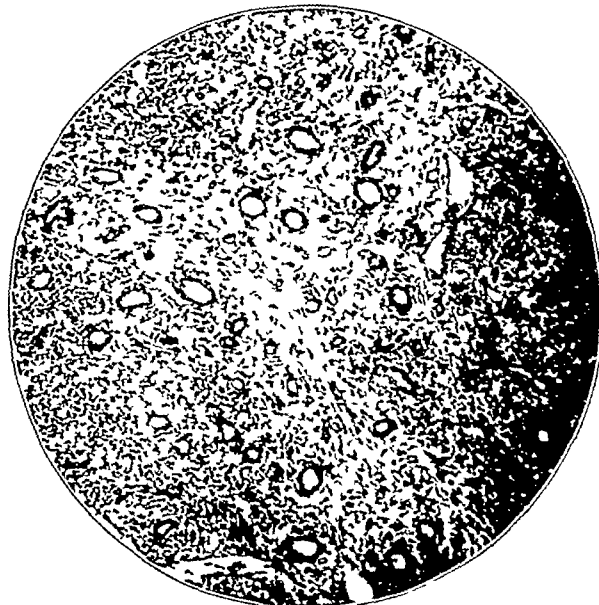


Fig 5.—Section of synovial membrane in syphilitic arthritis of knee joint. The synovia is edematous and dark red. The process is very vascular and there is an intense wandering cell infiltration in which plasma cells predominate. There are numerous large mononuclear cells and occasional giant cells but no focal collections. The endothelial cells of the small vessels show proliferation.

In case the tissue examination by the microscope shows no evidence of tuberculosis, or in case the guinea-pig inoculation shows, after a proper period of time, no evidence of tuberculosis, then it may be safely

assumed that the knee joint in question is free of tuberculosis. It is perhaps more frequent than is generally realized, for a person to have syphilis as well as knee joint tuberculosis. It is essential for those who attempt to estimate the value of therapeutic measures such as heliotherapy, to establish a positive diagnosis of bone or joint tuberculosis in all cases included in their statistics.

ABSTRACT OF DISCUSSION

DR. E. W. RYERSON, Chicago. It is really appalling to think what the results would be of a careful observation along these lines in the cases which so many of us for so many years have treated as chronic synovitis, as syphilitic arthritis, and what not, perfectly unscientifically, and yet avoiding the risk of an exploratory incision. This risk is becoming more negligible year after year. I can think of dozens of people with cracking knees, dear old ladies, complaining of pain and swelling, from whom I should hesitate to remove a piece of synovia. It should doubtless be done. Some of them are unquestionably tuberculous, and yet if I found that some of them were tuberculous, I do not think I should care to propose an arthrodesis of the knee joint or the other hand I think that every middle-aged adult who can be proved to have a tuberculosis of the knee joint should have an arthrodesis of the knee joint performed at the earliest possible opportunity. I believe this is a self-evident fact from the observations which I have made, and which many others have made, that tuberculosis in the knee joint in the adult does not get well without operation. The method of Dr. Allison is scientific and worthy of commendation. I wish we could extend it to a great many other conditions about which we have very little information.

DR. MELVIN S. HENDERSON, Rochester, Minn. I think that this paper by Dr. Allison is very important. The question of diagnosis is the crux of the whole situation. I do not believe that Dr. Allison infers that everybody will have to depend on a microscope diagnosis absolutely. There are some cases which are perfectly frank, in which the roentgen-ray and physical findings show it can be nothing but tuberculosis. Chronic persistent disability extending over many years, with destruction of joint surfaces and typical clinical appearances of a tuberculous knee, gives such a clear picture, that I believe the diagnosis could be made clinically in nearly 100 per cent in that group. But there are cases in which the method suggested by Dr. Allison of examining tissue removed and guinea-pig tests will have to be done to establish the diagnosis. I can recall two cases of tuberculosis in the joint in adults which were proved by the guinea-pig inoculation test, in which no destruction of bony parts was present, which after six and eight years respectively have been absolutely free from all symptoms following injection of iodoform emulsion done at the time of aspiration for diagnosis. Therefore we should not care to say that every case has to have a resection. Perhaps we will say we should wait until synovial membrane is extensively involved or extensive bony destruction is present. Resection in young patients gives excellent results. It has been my experience that amputation in elderly patients is to be preferred to resection and I should like to have Dr. Allison's opinion on that point.

DR. NATHANIEL ALLISON, Boston. I am trying to avoid a clinical discussion, but I believe that Dr. Ryerson is quite right in what he has said. When a diagnosis of tuberculosis is positive, it is better to remove the cartilage from the knee, because only by removal of the cartilage does the knee heal. This can be easily proved pathologically in the study of any series of cases. The persistence of the disease is a menace more serious than the destruction of the knee. I do not agree with Dr. Henderson that it is well to wait too long depending on "squinting" things into the knee in the hope of curing tuberculosis because I do not believe that tuberculosis is cured by such methods. The patients he refers to probably recovered from their tuberculosis because of improved hygienic conditions and a better resistance to the invasion of the disease.

ABDOMINAL BINDER AS A SUBSTITUTE FOR PITUITARY EXTRACT IN SEC- OND STAGE OF LABOR*

ALFRED C. BECK, M.D.

BROOKLYN

Injectations of pituitary extract increase the frequency and intensity of the uterine contractions. Pituitary extract, accordingly, is extensively used as an aid in the second stage of labor. Unfortunately, it acts differently in different women, and its occasional harmful effects cannot easily be remedied once they occur. The average dose, which in most women accelerates the birth of the child without risk, occasionally in others causes such violent contractions that rupture of the uterus may occur, especially if dystocia is present. Many instances of this unfortunate accident are recorded in the literature and have led to repeated

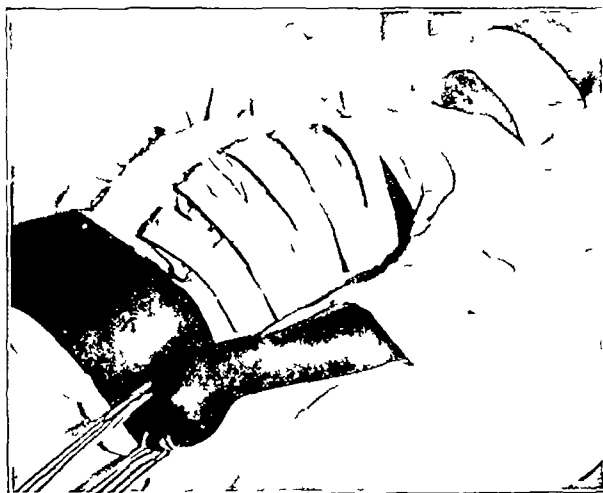


Fig. 1—Binder used at the Long Island College Hospital

warnings against the use of pituitary extract before the head has reached the pelvic floor. Even under such circumstances, the same violent contractions may cause extensive lacerations of the maternal soft parts and intracranial hemorrhage in the child. Because of these dangers, some obstetricians have advised that this uncertain drug never should be given to primiparas in the second stage of labor. Even in multiparas, its use is not always safe. Occasionally, after a small dose, the uterus goes into tetanic contractions and interferes with the uteroplacental circulation sufficiently to cause the death of the child. We have observed the fetal heart drop from 140 to 60 in several instances following the administration of this drug, and have felt that only deep anesthesia and immediate forceps extraction saved these children.

For several years, at the Long Island College Hospital, we have used the almost forgotten abdominal binder as a substitute for pituitary extract in the second stage of labor. As this measure is simple and is in accord with a definite physiologic principle, it probably was commonly used before the advent of obstetric for-

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

ceps In a search of the literature of the last seventy-five years, I was unable to find more than an occasional brief discussion of its use. It is not mentioned in most of the modern textbooks. Thirty years ago, however,

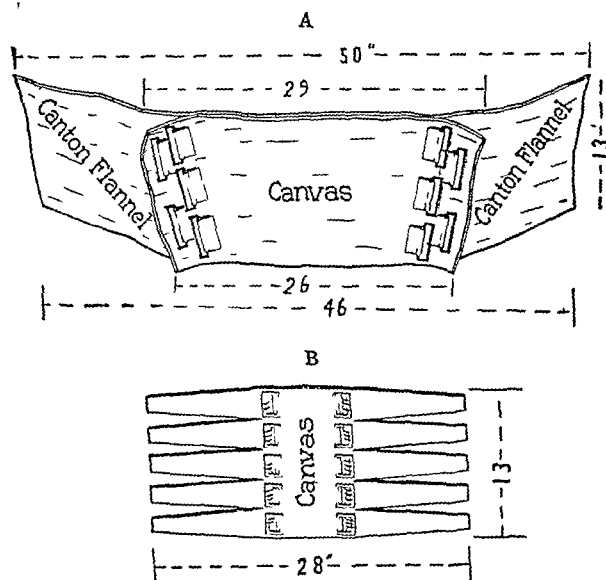


Fig 2—Details of the Long Island College Hospital Binder

the American Text Book of Obstetrics, in discussing the management of the second stage of labor, stated that "an abdominal binder is frequently useful in helping the progress of labor during the second stage, particularly in multiparas having lax abdominal walls."

In the early part of our work, an ordinary binder was used. We soon learned that it could not be applied very snugly, and that the pins frequently were torn out. Because of these difficulties, the binder shown in Figure 1 was devised. It is made in two parts (Fig 2). The upper section (A) is a piece of canvas, 29 inches

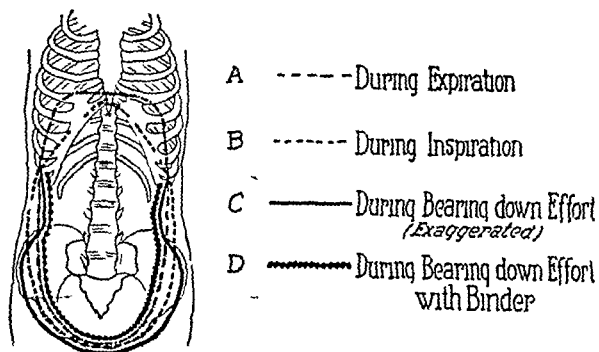


Fig 3—Contour of abdomen

long and 13 inches wide, to each end of which are attached five rings. This is sewed to a canton flannel lining that measures 50 by 13 inches. The lower portion (B) likewise is canvas. Its sides terminate in five tails, at the bases of which are attached five buckles.

Part A is placed under the patient and the canton flannel ends are crossed over the abdomen. Part B is then laid over these, and the tails are passed through the rings on Part A and fastened by means of the buckles at their bases. Thus, this type of binder can be snugly applied to the abdomen of a woman of any size, and can be tightened or loosened as the case

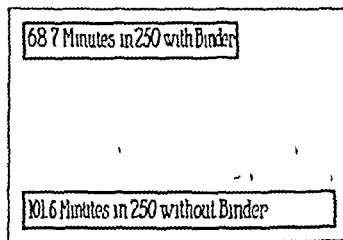
requires. When properly adjusted, it holds the uterus perpendicular to the pelvic inlet and prevents distention of the weaker parts of the abdominal wall, thereby increasing the intra-abdominal pressure and making the bearing down efforts more effective.

The action of an abdominal binder during the second stage is shown in Figure 3, which is a diagrammatic representation of the contour of the abdomen in respiration and during a bearing down effort. The line of dots and dashes (A) represents the abdomen during expiration. In inspiration, the diaphragm descends and the abdominal wall expands as shown by the broken line (B). When the patient bears down, she takes a deep inspiration, closes the glottis, and contracts her abdominal muscles. As the wall of the abdomen is stronger above the umbilicus, it becomes slightly constricted in this region while the weaker lower abdomen bulges. The solid line (C) is a somewhat exaggerated representation of this effect of a bearing down effort. When a binder is used, the weaker parts of the abdominal wall are supported, bulging below the umbilicus is prevented and the intra-abdominal pressure accordingly is increased, as is shown by the beaded line (D).

ADVANTAGES

The last 250 primiparous deliveries that occurred in our service, in which the use of an abdominal binder is a routine measure, were compared with 250 similar cases in which no binder was used, in order that we might learn the value of this measure. In the binder series, the average length of the second stage was 68.7 minutes while it was 101.6 in the other series. This difference in the duration of the second stage is shown in Figure 4. A more detailed analysis of the second stages in these 500 primiparas is given in Figure 5, which compares the results at fifteen minute intervals. The shaded portion of each circle represents the proportion of second stages that lasted one hour or less.

Fig 4—Average duration of second stage in 500 primiparous labors



The abdominal binder also diminishes the need for forceps. In fact, the number of forceps operations in the binder series was only slightly over half that in the other. As may be observed in Figure 6, forceps were required nineteen times in the 250 primiparous labors in which a binder was used, while thirty-five forceps operations were done in the 250 in which a binder was not used. All but one of the nineteen forceps deliveries in the first series were of the low variety, while the midapplication was necessary in seven of the thirty-five forceps cases in the second series. The binder, therefore, not only diminishes the number of cases in which forceps are necessary, but also almost eliminates the need for difficult forceps operations. If the patient is too weak to complete the delivery spontaneously, she can, with the help of a binder, force the head down to the outlet and, in the majority of instances, rotate the occiput to the symphysis.

By shortening the second stage and lessening the need for forceps, particularly midapplications, the infant mortality was diminished. Twelve infant deaths were noted in the 250 primiparous labors in which the binder

was not used, against eight in the 250 in which it was used (Fig 7). The causes of death of those eight infants were placenta praevia, one, accidental hemorrhage, one, toxemia, fetal heart not heard on admission, one, dry labor, fetal heart lost in first stage, one, intracranial hemorrhage, two, and unknown, two.

Our experience in more than a thousand additional cases has revealed still other advantages. When borderline dystocia exists, the use of a binder frequently is very helpful. In many instances, engagement takes

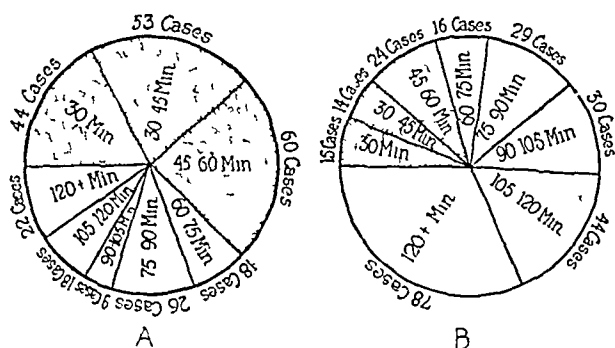


Fig 5—Length of second stage in A 250 primiparas with binder B 250 primiparas without binder

place soon after it is adjusted. Unlike pituitary extract, it tends to prevent rather than cause rupture of the uterus in these cases. In occipitoposterior presentation, the head descends and rotates much more quickly after a binder is applied. Therefore, this seldom causes difficulty in our clinic. The binder likewise is of great value in multiparas with relaxed and pendulous abdomen or marked obliquity of the uterus. Here, it not only causes an increase in the intra-abdominal pressure but also, by holding the uterus perpendicular to the pelvic inlet, prevents interference with the normal mechanism of flexion. The aid furnished by the binder also permits us to use more anesthesia and makes possible a painless second stage in the majority of cases.

DISADVANTAGES

1 The aid furnished by the abdominal binder is passive. It therefore is of no value if the patient is too tired to use her voluntary efforts. We avoid this difficulty by resorting to its use at the onset of the second stage, when the bearing down efforts are strong.

2 The increase in the intra-abdominal pressure may affect the child. After each uterine contraction, the lower strap is loosened in order that we may listen to the fetal heart. If the child is in danger, the condition may be relieved at once by loosening the binder.

3 If the progress is too rapid, as frequently is the case in the latter part of the second stage, extensive lacerations may occur of the binder readily corrects this difficulty.

CONCLUSION

While the use of an abdominal binder as an aid in the second stage is not entirely without risk, its action is always within our control. In this respect it is preferable to pituitary extracts, for, if its effect is harmful, this fact can be easily learned and the condition at once relieved by either loosening or entirely removing the binder.

20 Livingston Street

ABSTRACT OF DISCUSSION
DR BERTHA VAN HOOSSEN, Chicago. No drug is more dangerous to both mother and child than pituitary extract, if given before delivery is complete. The value of the abdominal binder first came to my attention in the management of diastasis recti. Its successful use in these cases demonstrates the principle underlying its action. Every time the abdominal wall is lifted by the contracting uterus much energy that might have been used in dilating the cervix or expelling the baby is lost. The abdominal belt that I am using may have an advantage over Dr Beck's in that it has patent buckles that never slip during adjustment and make possible snugger fit. A few moments after its application, the head of the baby will have descended so that the binder must be made tighter to maintain an unyielding abdominal wall. There are also four slitlike windows in the anterior part of the belt through which a phonendoscope may be inserted for watching the fetal heart rate. I usually apply the binder at the beginning of labor, not only to accelerate the contractions but also to determine whether labor has really begun. If, after the binder is applied, the pains do not become stronger and the cervix does not dilate or efface, labor has not commenced, for the binder, like pituitary extract, will not initiate labor. I wish that Dr Beck would tell us how his patients feel regarding the belt. My patients complain so bitterly that I try never to apply it till the patient is under scopolamine, nitrous oxid or ethylene anesthesia. At Cook County Hospital, the interns say, "If you put on that belt we shall never get a chance to learn how to apply forceps." Nevertheless, they are able to get many hours of sleep by shortening labor through the use of the belt. I estimate that labor with the belt will take one fourth of the time that it will without the belt. The busy practitioner who wishes a safe method for securing a rapid delivery should use an efficient abdominal binder. This harmless substitute for pituitary extract will save some infants' lives, many exhausted mothers, and a great deal of the physician's time.

DR JOHN GARDINER, Toledo, Ohio. Dr Beck and Dr Van Hoosen have complicated the matter a little, for an ordinary buck towel or small sheet seems to answer every purpose, and one or the other is always at hand. There is no need to carry around any extra device. Thirty or forty years ago, the leaders in American obstetrics were interested in the abdominal binder. Their conclusions were if there is any diastasis of the rectus muscles the abdominal binder helps, if there is a pendulous abdomen the abdominal binder helps, in other words, if the abdominal muscles need support, the abdominal binder helps. There is great question whether

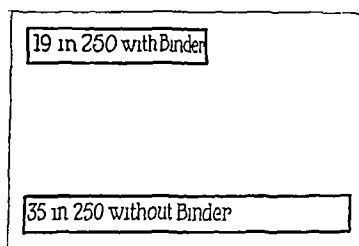


Fig 6—Forceps operations in 500 primiparous labors

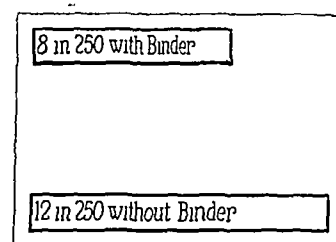


Fig 7—Infant deaths in 500 primiparous labors

Removal

we should go farther than this. I have been studying a series of cases, and I find that it is difficult to tell when the first stage of labor ends and the second stage begins. From this series of cases, which I hope to be able to report next year, we have come to the conclusion that any interference with labor before the first stage is completed is disadvantageous to the patient. It seems that the desire to hasten the completion of labor has gripped the profession with vicelike tenacity. Especially is this the case among those in high places. It is right that it should be here, for they have the facilities and equipment behind them for such experimentation. Now, even the binder is not without danger. Sometimes toward the end of the second stage of labor the binder must be removed.

In some of these cases the second stage of labor is not very long, and instead of forcing the labor we must quickly restrain the natural forces in order to save the outlet of the birth canal. Presenting the other side of the argument, it is not advisable in many cases to shorten labor. Our ideal should be uninjured, not repaired women.

DR C. LEE GRABER, Cleveland: I have used the common bath towel and have accomplished at least part of the effects mentioned.

DR A. C. BECK, Brooklyn: We do not use this binder in the first stage, as its use increases the intra-abdominal pressure, and we feel that this increase in the intra-abdominal pressure in the first stage may cause premature rupture of the membranes. Dr. Van Hoosen's second point, concerning the added discomfort of the patient, has been observed in some of our cases. We find, however, that about half of the patients say that they are more comfortable when the binder is used in the second stage. It supports the back and abdomen. Occasionally some of them do complain that there is a difficulty particularly with respiration. Under these circumstances the upper straps are loosened. There are many other advantages of this binder. We believe that this binder has made occipitoposterior labors easier in most instances because the increased intra-abdominal pressure forces the head down to the pelvic floor and usually completes its rotation. By increasing the intra-abdominal pressure in the second stage, more anesthetic may be used without slowing the labor. It therefore is possible to make the second stage practically painless. Regarding the sheet and the towel we agree that they are advantageous. Our experience with this binder, however, leads us to feel that it is far superior to either of them.

RESUSCITATION AFTER ELECTRICAL SHOCK*

WILLS MACLACHLAN, B.A.Sc., F.A.I.E.E.

TORONTO

An old Chinese maxim says, "When you put on your clothes remember the labor of the weaver, when you eat your daily bread, think of the hardships of the husbandman." If written today, it might well have added, "When you turn on the light, remember the work of the lineman and the operator." It is in the interest of these men that I would discuss resuscitation after electrical shock. It is not entirely without reason that the electrical profession and industry look to the medical profession for special consideration and assistance. One need only mention the great boon to physicians the now known electrical helps, such as the roentgen ray, are, to say nothing of the future.

In studying the question of electrical shock, certain points stand out. If an electrical current flows from foot to foot, practically no effect will be noticed. If, however, it flows from hand to hand, serious results will ensue. In other words, if the path of the current passes through the thorax, a shock will naturally occur.

If the parts of the body that are in contact with the conductors are dry, a less severe shock will be felt than if the contacts are wet. From this one can see the cause of severe shocks and fatalities from comparatively low voltage circuits in bath rooms.

In low voltage shocks, the effect is usually to cause fibrillation of the heart, in higher voltage shock cases, at first the heart is not involved, but paresis of the respiratory center occurs. In practice, shocks below

220 volts cause fibrillation of the heart, while in shocks of more than 1,000 volts there is little if any immediate effect on the heart, the effect being almost wholly confined to the respiratory center.

Owing to shortness of time, I must leave this subject, but I would direct interest to the lectures by Jex-Blake,¹ a reference very little used on this side of the Atlantic, in regard to electrical shock.

From earliest times, various methods of resuscitation have been put forward. These have been more or less efficient. Two years after the discovery of oxygen, an apparatus using two bellows and feeding oxygen to the patient was used in resuscitation from drowning. In 1829 this method was condemned by the Royal Humane Society, and the bellows were relegated to the fireside. From 1857 to 1903, four important manual methods of resuscitation were promulgated, those of Schafer and Silvester being the best known. In America, little was known of the Schafer method until Dr. Schriber presented the Harvey Lecture in 1909, the Silvester method being universally used and taught in medical schools. Since 1909, the Second Resuscitation Commission under the chairmanship of Dr. Cannon, the Third Resuscitation Commission under the chairmanship of Dr. Meltzer, and the American Gas Association's Resuscitation Commission under the chairmanship of Dr. Drinker have investigated various mechanical and manual methods of resuscitation and have uniformly recommended the prone pressure method.²

Various authorities have attempted to evaluate the volume of exchanged air due to the various methods. Owing to the fact that there are a number of variables difficult to reproduce and that the mechanics of the lungs of a person suffering from electric shock, drowning or gas poisoning are difficult to reproduce, to say the least, very different results have been obtained.³ Thus, however, has been proved, that the exchange of air which results from the prone pressure method is quite sufficient to maintain life.

It is unnecessary for me to explain the mechanics of the chest here, but it may not be out of place to draw attention to the fact that the prone pressure method more nearly imitates the natural process of breathing than does any other method. It might further be pointed out that it is the easiest method to perform and the least fatiguing, and that it can be performed by one person without assistance.

In the public utility industry, the men are usually scattered in comparatively small groups—often miles away from their headquarters. If provision is to be made for resuscitation, it must be of such a nature that it is always readily available and simple, so that it can be made of use instantly by the average man. It must also be effective, because the saving of a life is at stake and inefficiency cannot be tolerated.

1 Jex-Blake, A. J. Death by Electric Currents and by Lightning. Goulstonian Lecture. Royal College of Physicians. London. Brit. M. J. March 1, 8, 15 and 22, 1913.

2 Resuscitation Commission. W. B. Cannon, Chairman. Tr. National Electric Light Association. 1913. Resuscitation Commission, S. J. Meltzer, Chairman. Ibid. 1919. Resuscitation Commission, Cecil K. Drinker, Chairman. Tr. Am. Gas A. 1923. Reports of Accident Prevention Committee. Tr. Nat. Electric Light A.

3 Schafer, A. E. The Relation of Certain Methods of Performing Artificial Respiration in Man. Proc. Roy. Soc. Edinburgh. 1903. Description of a Simple and Efficient Method of Performing Artificial Resuscitation in a Human Subject. Especially in Cases of Drowning. Proc. Roy. M. & Chir. Soc. London. 1903. 1904. Artificial Resuscitation in Man. Harvey Lectures. 1907. 1908. Luffier, C. A. Resuscitation. New York. John Wiley & Sons. 1915. Keith, Arthur. Three Hunterian Lectures on the Mechanism Underlying the Various Methods of Artificial Respiration. Practised Since the Foundation of the Royal Humane Society. 1774. Lancet. 1909. Drinker, C. K. Present Status of Problem of Resuscitation in Cases of Electric Shock and of Carbon Monoxide Poisoning. J. Indust. Hyg. 5, 255 (Nov.) 1923. Meltzer, S. J. History and Analysis of Methods of Resuscitation. M. Rec. 92, 1 (July 7) 1917.

* Read before the joint meeting of the Section on Pharmacology and Therapeutics and the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

Having this problem before it, the National Electric Light Association has standardized on the prone pressure method, and the member companies have had many thousands of employees trained in it and required to practice it regularly. The result has been that the lives of a number of employees and the public have been saved as a result of the training and practice.

As a method of recognition, a medal known as the Insull medal has been awarded in meritorious cases. The details of one case may be of interest.

REPORT OF CASE

Feb. 20, 1923, S. L. S., a patrolman employed by the Texas Power and Light Company, and his wife were motoring along a road near Irving, Texas. The man stopped the car and went to take some measurements on a high tension line, and in so doing received a shock that rendered him unconscious. He stopped breathing. Mrs. S. had been trained in resuscitation and immediately went to her husband's assistance. By persevering in applying the method, she was able to resuscitate him. She then assisted him to the truck, and drove the truck into the nearest town, where he was transferred to an ambulance.

Her remark on being presented with the Insull medal was, "By knowledge of this method, I have Steve to share the honor with me."

These awards are made only after a very careful investigation into the facts and the examination of reports made under oath.

The electrical profession and industry are not unmindful of the assistance of the American Medical Association and physicians generally in coping with the question of resuscitation. It feels that since it has assisted in the research and also has trained its employees and insisted that they maintain their efficiency by practice, it can ask for further assistance from the medical profession.

At the time of an accident, the patient is cleared from the current and resuscitation started at once. Then a call is sent for a physician. When he arrives he will usually find men perfectly competent to perform resus-

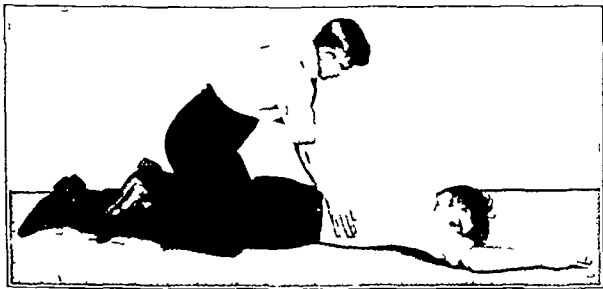


Fig 1—Hands in position

citation carrying out their instructions, and he can be of inestimable value if he can sustain their morale by encouragement and not change the method. The patient's mouth and throat should be cleared, a suitable hypodermic injection given, and measures taken to keep the patient warm. It is wise to withhold morphin until the patient is breathing.

Jex-Blake¹ says "Nothing less than cooling of the body or the onset of rigor mortis should be taken as evidence of death here." The men have instructions to continue resuscitation until the patient breathes or the onset of rigor mortis. This may be an extreme view, but no harm can occur. It is a general view that resuscitations in the past have been stopped too soon. Authentic cases are on record of patients, after being

declared dead, being resuscitated and regaining their former health.

Is it too much to ask, when we have obtained advice as to the best method, had our men trained in the method and require them to practice it, that the attending physician cooperate in sustaining their morale and use every effort to save the life in the balance?

In many papers on resuscitation, it is taken for granted that the method is so well known that it would be a waste of time to give the details. However, a demonstration of the method may not be out of place, and details can more readily be shown.

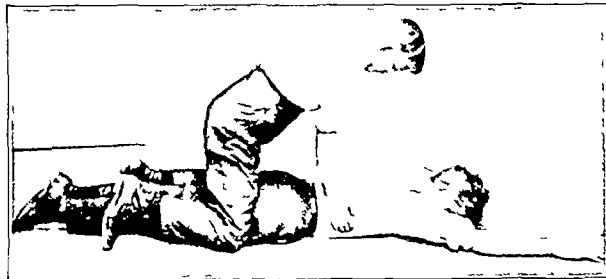


Fig 2—Pressure on

PRONE PRESSURE METHOD

The victim should be quickly released from the current, care being taken to avoid receiving a shock. Any dry non-conductor (rubber gloves, clothing, wood or rope) may be used to move either the victim or the conductor. Metal or any moist material should not be used. If both the victim's hands are grasping live conductors, an effort should be made to free them one at a time. If necessary, the current should be shut off.

The nearest switch should be opened, if that is the quickest way to break the circuit.

If it is necessary to cut a live wire, an ax or a hatchet with a dry wooden handle should be used, the face being turned away to protect it from an electrical flash.

As soon as the victim is clear of the live conductor, a finger should be put in his mouth and throat to remove any foreign body, such as tobacco or false teeth. If the mouth is tight shut, no attention should be paid to the foregoing instructions until later, but resuscitation should be immediately begun. The patient will breathe through the nose and, after resuscitation has been carried on a short time, the jaws will probably relax and any foreign substance in the mouth can then be removed. No time should be taken to loosen the patient's clothing as *every moment of delay is serious*.

The patient should be laid on the abdomen, one arm extended directly overhead, the other arm bent at the elbow, and with the face resting on the hand or the forearm so that the nose and mouth are free for breathing (Fig 1).

The resuscitator should kneel, straddling the patient's hips, with the knees just below the patient's hip bones or the opening of the trousers' pockets. The palms of the hands should be placed on the small of the back with the fingers resting on the ribs, the little finger just touching the lowest rib, the thumb alongside the fingers, the tips of the fingers just out of sight (Fig 1).

With the arms held straight, the resuscitator should swing forward slowly so that the weight of his body is gradually brought to bear on the subject (Fig 2). This operation, which should take from two to three seconds, must not be violent, as internal organs may be injured. The lower part of the chest and also the abdomen are thus compressed, and the air is forced out of the lungs, the diaphragm is kept in natural motion, other organs are massaged, and the circulation of the blood is accelerated.

Now the resuscitator should immediately swing backward so as completely to remove the pressure, thus returning to

the position shown in Figure 3. Through elasticity, the chest wall expands and, the pressure being removed, the diaphragm descends, and the lungs are thus supplied with fresh air.

After two seconds, the resuscitator should swing forward again. Thus the double movement of compression and release should be deliberately repeated from twelve to fifteen times a minute, a complete respiration being made in four or five seconds. If a watch or a clock is not visible, the natural rate of the resuscitator's own deep breathing should be followed. The proper rate may be determined by counting—swinging forward with each expiration and backward with each inspiration.

As soon as this artificial respiration has been started and while it is being continued, an assistant should loosen any tight clothing about the patient's neck, chest and waist. The patient should be kept warm. Ammonia should be placed near the nose, the safe distance being determined by first trying how near it may be held to the resuscitator's own nose. No liquids whatever should be given by mouth until the patient is fully conscious.

Artificial respiration should be continued without interruption (if necessary for four hours) until natural breathing is restored. Cases are on record of success after three and one-half hours of effort. The ordinary tests for death are not conclusive in cases of electrical shock.

When the patient revives, he should be kept lying down and not allowed to get up or to be raised under any consideration.

The patient should then have any other injuries attended to and he should be kept warm, being placed in the most comfortable position.

Resuscitation should be carried on at the nearest possible point to which the patient received his injuries. He should not be moved from this point until he is breathing normally of his own volition and then should be moved only in a lying position. Should it be necessary, owing to extreme weather conditions, to move the patient before he is breathing normally, he should be kept in a prone position and placed on a hard surface (door or shutter or the floor of a conveyance), resuscitation being carried on during the time that he is being moved.

A brief return of spontaneous respiration is not a certain indication for terminating the treatment. Not infrequently, the patient, after a temporary recovery of respiration stops breathing again. The patient must be watched and if normal breathing stops, artificial respiration should be resumed at once.

Those responsible for the minimizing of the effects of electrical shock know well that the last word has not been said on the subject. They know, however, that in regard to the setting up of artificial respiration, the prone pressure method has proved to be the most efficient and the easiest to teach to men and to carry out. There are other points that need careful study, such as correcting the fibrillation of the heart and shortening the duration of the paralysis of the respiratory center. Careful research work is needed here.

In the meantime, however, much can be gained by the cooperation of the American Medical Association and the attending physicians with the electrical industry in standardizing the prone pressure method as the treatment for electrical shock. The men are trained in this method, and their efficiency is maintained by practice. Is it too much to ask physicians to assist?

802 Excelsior Life Building

RESUSCITATION

FROM CARBON MONOXID ASPHYXIA, FROM ETHER OR ALCOHOL INTOXICATION, AND FROM RESPIRATORY FAILURE DUE TO OTHER CAUSES, WITH SOME REMARKS ALSO ON THE USE OF OXYGEN IN PNEUMONIA, AND INHALATIONAL THERAPY IN GENERAL.*

YANDEIL HENDERSON, PH.D.

NEW HAVEN, CONN.

A large proportion of all deaths, perhaps the majority from all ultimate causes, are immediately due to failure of respiration. The prevention of even a small fraction of them will amount in the aggregate to the saving of a very large number of lives. The procedures and apparatus of which I shall speak have already demonstrated their capacity to save these lives, and probably more. The methods lie in a nearly new field of therapeutics, a field which we may call inhalational therapy. It is sometimes a useful accessory and sequel to artificial respiration. But it is of much greater scope than mere artificial respiration.

MANUAL ARTIFICIAL RESPIRATION

Others are to deal primarily with the topic of artificial respiration. I will merely add my testimony to theirs in support of the conclusion reached by every one of the scientific commissions¹ that have studied this subject. This conclusion is that for the treatment of electric shock, drowning, and other conditions producing complete cessation of breathing, the

Schafer manual prone pressure method² should be used in preference to any other. The use of artificial respiration apparatus should be discouraged, for the simple manual method is much more effective. There is some evidence that mechanical devices may even be injurious to the lungs. These apparatus have few, if any, well substantiated cases of resuscitation to their credit. On the other hand, hundreds of lives have been saved with the manual method.

It is essential that the medical profession should learn the prone pressure method and should realize the importance of applying it immediately in all cases in which respiration has been stopped by an electric shock, drowning or asphyxia. All employees of electric light companies and telephone companies, all boy scouts, and a large number of the better trained policemen and firemen now know how to administer the prone pressure



Fig 3—Pressure off

* From the Laboratory of Applied Physiology, Sheffield Scientific School, Yale University.

* Read before the joint meeting of the Section on Pharmacology and Therapeutics and the Section on Preventive and Industrial Medicine and Public Health at the Seventy-fifth Annual Session of the American Medical Association, Chicago, June 1924.

1 Report of the Commission on Resuscitation from Electric Shock, New York National Electric Light Association, 1913. Report of the Committee on Resuscitation from Mine Gases, Technical Paper 77, Washington D. C., U. S. Bureau of Mines, 1914. Work of the Commission on Electric Shock, editorial J. A. M. A. 61:1637 (Nov. 1) 1913. Proceedings and Resolutions of the Third Resuscitation Commission, Science 48:563 (Dec. 6) 1918. Drinker, K. R., Drinker, C. K., and Redfield, A. C. J. Indust. Hyg. 6:109 (Aug.) 1923. Final Report of the Commission on Resuscitation from Carbon Monoxide Asphyxia, ibid. 6:125 1923.

2 Schaffer, F. A. Harvey Society Lectures for 1907-1908, New York 1909, p. 223.

method It is sometimes charged against the medical profession that in cases of drowning and electric shock, in which lives probably could be saved by the immediate and continued application of this most effective method of artificial respiration, lives have been lost because the first physician who reached the case was unacquainted with the method He has therefore ordered the electric lineman or policeman or boy scout who was administering the prone pressure method effectively, and was well on the way to saving life, to desist He has then either declared the patient dead or has called an ambulance and sent him to the hospital, where he arrived dead If there is any basis for this charge, it is time that the medical profession removed it by learning the prone pressure method

It is only fair to add also that, in ordinary medical practice, a physician in the past has rarely seen cases requiring artificial respiration Often he fails to realize that a perfectly healthy young man, whose breathing has been temporarily stopped by an electric shock or by immersion in water, is a very different subject from the patient who stops breathing after a long and wasting, or acute and destructive, illness Often, in the drowning or electric cases, the vital machine merely needs to be started again It is like cranking an automobile when the engine has stalled and the self-starter is out of order With the increasing use of electricity, not only for transportation and industry, but also in our homes, for light, for cooking, and, most dangerous, for the laundry, electric shock has come to be one of the ordinary hazards of modern life, and every one should know how to render first aid The essentials of artificial respiration are that it should be applied without the loss of a moment, without waiting to telephone or send for apparatus, and that, even if the patient is at first pulseless and apparently dead, it should be continued for three hours, or until spontaneous breathing returns, or rigor mortis develops

Two points more in this connection are 1 In my opinion, it is the duty of the National Electric Light Association, under present conditions, to keep a standing advertisement in the principal medical journals showing the prone pressure method with the standard descriptions and diagrams of the procedure 2 I will also take this opportunity to call attention to certain ethical and economic conditions that seriously obstruct greatly needed investigations and development in this and related topics of immense importance in the field of industrial medicine The scientific men who have served on the four successive commissions on resuscitation in the last decade have rendered a service that has not only saved hundreds, or more probably thousands of lives, but also millions of dollars in compensation claims It has cost the immensely wealthy electric industry and interests of America virtually nothing They have as yet made in return no contribution whatever, even to support the scientific work of the men who have rendered this service This is no fault of the electric association, for no request of the sort has ever been made to it It was the American Medical Association which, if I remember rightly, appointed the first commission and asked its members to serve All medical authorities tacitly assume that it is unethical for any money to pass except between the private patient and his personal physician So for the information of representatives of our billion dollar commercial interests I wish to give this advice If one has a great legal question involving millions, an eminent lawyer should be employed and he will charge

accordingly For engineering questions, great engineers should be employed at almost as high a price But if it is a question of life and health, the American Medical Association should be asked to appoint a commission of men expert in that line Such men are usually far from having adequate means for even their scientific work, let alone their own and their family's support Nevertheless, they will spend months or years on the problem, and they will probably render a service which, even in dollars, is exceedingly valuable to the commercial interest concerned And medical ethics will require that they render this service for nothing

Such misguided idealism reduces itself to an economic absurdity and defeats its own purpose Like the so-called "full-time plan," which has done enormous injury to American medical scientific investigation and investigators, it prevents the investigator in this field from earning his living and the means to carry on his researches out of the honest wages of honest work Instead, he is subjected more and more to the eleemosynary despotism of the great foundations and the endless red tape of the National Research Council

PREVENTION OF RESPIRATORY FAILURE

The main topic to which I wish particularly to call attention is a broad one and occurs repeatedly in the experience of every physician and continually in every hospital It is that of preventing failure of respiration It applies, with variations, to carbon monoxid asphyxia, to acute intoxication under alcohol and many other volatile poisons, to the depression following anesthesia, to morphin poisoning, to asphyxia of the new-born infant, and to a number of other conditions It has, in fact, very wide applications in most of the branches of medicine and surgery³

Suppose that we are confronted with a case of any of the types just mentioned, in which death from respiratory failure is threatening or evidently approaching There is no need as yet for artificial respiration, for natural breathing still continues, but it is growing weaker When it stops it will be too late How are we to reason regarding such a case? What are we to do to effect resuscitation and restoration to normal life?

First, we know now that the stimulant which Nature herself uses to maintain breathing is carbon dioxide It is the increased production of carbon dioxide during muscular exercise that causes the corresponding increase in the volume of air breathed It thus provides the increased supply of oxygen to meet the increased need Conversely, if the carbon dioxide in the blood is abnormally decreased by excessive breathing, we know from well established experiments that respiration is liable to stop until the normal amount of carbon dioxide reaccumulates in the blood and again stimulates the respiratory center

Secondly, we know that oxygen deficiency, if at all intense, acts as a sort of whip, which excites respiration to activity, and even to excessive activity, but injures at the same time and is liable to be followed by a subsequent period of depressed breathing

Thirdly, and no less important, we know that pure oxygen, or air enriched with oxygen, is not a respiratory stimulant On the contrary, under some conditions

³ Henderson Vandell Bull Johns Hopkins Hosp 21, No 233 1910 Henderson Vandell and Haggard H W The Treatment of Carbon Monoxid Poisoning J A M A 77 1065 1067 (Oct 1) 1921 Report of the Committee on Anesthesia of the American Medical Association J A M A 68 1908 (June 15) 1912 Henderson Vandell and Bryant John Closed Ether and a Color Sign J A M A 65 1 (July 3) 1915

it is, in effect, a powerful depressant of breathing. Many years ago, Mosso⁴ observed what he called "oxygen apnea," or cessation of breathing induced by oxygen. From the observations of Haldane and his collaborators⁵ and from my own work,⁶ the following partial explanation or, rather, description of this important phenomenon, may be offered. When a man or animal is exposed to a deficiency of oxygen for a time, his breathing is greatly augmented and he blows off more carbon dioxide than the body can well afford to lose from its store of carbonic acid and bicarbonates. If then, he is suddenly given oxygen, or even merely fresh air, a marked decrease in respiration occurs. The breathing may even stop entirely. I have seen death follow in an animal given pure oxygen suddenly after incomplete carbon monoxide asphyxia. It is well known to the men in our city fire departments that a man who has been working in the fumes of a burning building often collapses when he comes out into fresh air. The same effect is known among mine rescue crews. Often, they walk out of the gases in a burning mine with fair vigor and coordination of movement, but fall unconscious after drawing a few breaths of fresh air. In the laboratory, animals that have been kept in a gassing chamber until slightly groggy with carbon monoxide sometimes collapse when removed into fresh air.⁷ Similarly, athletes seldom collapse during a competition, but when the race is over, with its strain on the oxygen-supplying power of lungs and heart, they pant heavily for a few minutes and then collapse. In all these cases we see marked depression coincident with abundant oxygen after a period of oxygen deficiency.

It is not possible as yet to give a complete explanation of these events, but we can note their similarities and recognize that certain features are common to nearly all of them. Probably in all cases excessive blowing off of carbon dioxide occurs during the period of oxygen deficiency and excessive breathing. The deficiency of oxygen, meanwhile, either by itself or through some incomplete combustion product, keeps respiration working, and working even excessively. But when a full supply of oxygen is renewed, this anoxic stimulus is removed. The deficiency of carbon dioxide then allows respiration to fail.

The condition of deficiency of carbon dioxide⁸ is called "acapnia," from the Greek *καπνός*, smoke. Literally, acapnia means smokelessness. It tends to be overcome spontaneously as the carbon dioxide produced in the body reaccumulates in the blood. But this may require a long period, and while the condition lasts it profoundly disturbs the acid-alkali balance in the blood. It forces alkali out of the blood and may induce an extreme and rapid decrease in the alkali reserve.⁹ It thus induces what is now called acidosis.

It used to be common to think that deficiency of oxygen was necessarily associated with excess of carbon dioxide in the blood. This may perhaps be the case in drowning, but under nearly all clinical conditions we actually find anoxemia and acapnia associated. This combination of deficiency both of oxygen and of carbon

dioxide is capable of inducing profound functional disturbances. Not only is the blood alkali lowered, but such conditions as edema of the brain and congestion of the lungs may result. Space forbids a full account or an attempt at analysis of this combination of interacting causes. Let us rather turn to the question as to the conditions under which they occur and the effective method of resuscitation.

Obviously, inhalation of oxygen alone is not under such conditions a logical procedure. Only in pneumonia must we recognize an exception to this statement. Under nearly all other conditions, oxygen administered for purposes of resuscitation should contain also a sufficient amount of carbon dioxide to stimulate the breathing. Usually, 5 per cent of carbon dioxide is sufficient in from 90 to 95 per cent of oxygen. It is the use of this mixture administered by a special type of inhaler, the so-called "H. H. inhalator," devised by us, which is the essential feature of the treatment introduced by my associate, Dr. H. W. Haggard, and myself and approved by the last resuscitation commission.¹⁰

CARBON MONOXIDE ASPHYXIA

The field in which inhalation of oxygen plus carbon dioxide has made its most definite and extensive success is that of carbon monoxide asphyxia. In nearly all our cities the number of deaths from this cause is large. It is exceeded only by a few of the most important diseases, and, unlike most diseases, deaths from carbon monoxide are steadily increasing in number. As a cause of mortality, it is nearly as important as diabetes. Carbon monoxide has probably displaced lead as the most important industrial poison. More than 400 deaths a year are assigned in New York City to the city gas.¹¹ The public demands cheap gas, cheap gas means a high content of carbon monoxide, and the fatalities rise accordingly. It is quite possible that by scientific research, improvements in gas manufacture could be developed that would afford a gas for lighting, heating and cooking with distinct economic advantages (higher in methane and lower in carbon monoxide) and at the same time much less poisonous. If the carbon monoxide content were reduced one-half, the deaths would probably be reduced to a quarter or less of the present figures. But this great industry has as yet no central research institute for such investigations—an extremely short-sighted policy. I am glad to be able to add, however, that the American Gas Association supplied the funds by which the inhalational treatment of carbon monoxide was developed.

In many industries, carbon monoxide is one of the chief health hazards, notably around blast furnaces and in mines. Every stove, in a dwelling house, that can be checked to the point of incomplete combustion may give off carbon monoxide and asphyxiate its owner and his family. When natural gas is used in imperfect appliances, dangerous amounts of carbon monoxide are produced.¹² In the smoke from burning buildings it is the chief toxic constituent, it is one of the dangers that the city firemen face. It is the chief toxic constituent

⁴ Mosso A. Arch. Ital. Biol. **41** 138, 1904. Henderson and Yandell Am. J. Physiol. **25** 329, 1910.

⁵ Haldane J. S. Respiration. New Haven: Yale University Press, 1922. Haldane, Kellias and Kennaway. J. Physiol. **53** 181, 1919.

⁶ Henderson and Yandell and Scarborough M. M. Am. J. Physiol. **26** 260, 1910. Henderson and Yandell. Science **49** 431, 1919. Henderson and Yandell and Haggard H. W. J. Biol. Chem. **43** 1, 1920. **47** 421, 1921.

⁷ Haggard H. W. Studies in Carbon Monoxide Asphyxia. Am. J. Physiol. **56** 390 (July) 1921 and personal communication to the author.

⁸ Henderson and Yandell, Haggard H. W. and Coburn R. C. The Acapnia Theory. J. A. M. A. **77** 424-426 (Aug. 6) 1921.

⁹ Henderson and Yandell and Haggard H. W. J. Biol. Chem. **33** 345 (Feb.) 1918. **43** 3 (Aug.) 1920.

¹⁰ Henderson, Yandell and Haggard H. W. Report I of Commission on Resuscitation from Carbon Monoxide Asphyxia to American Gas Association. J. A. M. A. **79** 1137-1145 (Sept. 30) 1922. Drinker C. K. J. Indust. Hyg. **5** 255 (Nov.) 1923. Sayers R. R. and Yant W. P. Pub. Health Rep. **38** 2053 (Sept.) 1923. Sayers R. R. Yant W. P. and Jones G. W. Ibid. **38** 2311 (Oct. 5) 1923.

¹¹ Report of the Chief Medical Examiner of the City of New York, 1918-1921, p. 27.

¹² Jones, Berger and Holbrook. Technical Paper 337. Dept. of the Interior, Bureau of Mines, 1923. Brumbaugh and Jones. Technical Paper 212. Dept. of Commerce, Bureau of Standards, 1922. Hayhurst E. R. Am. J. Pub. Health **13** 462 (June) 1923. Monger J. F. Radio bulletins, etc. on carbon monoxide. Department of Health, State of Ohio, Columbus.

of automobile exhaust gas¹³ The 10,000,000 or 15,000,000 automobiles, in which we Americans get our transportation, our recreation and our favorite atmosphere, discharge an average of about 2 cubic feet per car each minute. Even a Ford produces at least a cubic foot of carbon monoxide a minute, enough to render a small closed garage deadly in five minutes. Men who work in garages and repair shops are almost daily subjected to partial intoxication by carbon monoxide.

Suppose now that a man is overcome by inhaling a fairly high concentration of carbon monoxide under any of the foregoing conditions, his legs give way under him before he realizes his own condition. If he is fortunate enough to be discovered before death, he is dragged or carried out of the garage, out of the trench in the street, or away from the blast furnace, where he has been working. If he has stopped breathing, his rescuer immediately applies the prone pressure method. At the same time, another person holds against his face the mask of the inhalator so that the artificial respiration draws into the lungs the oxygen and carbon dioxide, supplied from a tank in which this mixture of compressed gases is held. The carbon dioxide thus tends to stimulate spontaneous breathing and artificial respiration should then be discontinued, but the inhalation should be continued for from fifteen to thirty minutes longer.

This is not a fanciful account of an imaginary case, but of the actual features of a large and rapidly increasing number of resuscitations of which we have record. There are certain extraordinary sequels. After such a short but acute gassing, a man who survives without having been treated with oxygen and carbon dioxide is always acutely sick with splitting headache and nausea, lasting for two or three days. Recent investigations by Forbes¹⁴ in my laboratory have afforded strong evidence from animal experiments that this headache is due to a congestion and edema of the brain. Forbes has published photographs showing the brain bulging out through a trephine hole. The available data from men indicate a similar edema of the brain. On the other hand, our records show that men who have suffered a short but acute gassing, and have then been treated with oxygen and carbon dioxide, often escape this headache and nausea almost entirely. Instead of going to bed for a day or two, they often go back to work within an hour after being comatose.

Evidence from both the laboratory and clinical cases demonstrates conclusively the reason why spontaneous recovery without treatment is so slow and painful, and why, on the other hand, the inhalation treatment may produce such brilliant results in suitable cases. The reason is that an untreated man may lie for hours with subnormal breathing, and the carbon monoxide is therefore eliminated so slowly that the asphyxia continues long after he is removed from the poisonous atmosphere. On the other hand, when the inhalation treatment is applied, the carbon dioxide administered induces deep, full breathing, it thus draws the oxygen, with which it is mixed, into the lungs in such large amounts that carbon monoxide is rapidly displaced from the blood. The blood itself and, apparently, the brain also

are thus rapidly restored to a nearly normal condition. The reason that a special type of inhaler is necessary is that it must allow adjustment to the greatly augmented breathing of the patient with no waste of the oxygen and carbon dioxide.

We already have records of patients thus treated and revived not only in many parts of the United States, but from Alaska on the west to Norway on the east. I have correspondence with mining authorities in England and with the government bureau of industry in Holland looking to the introduction of the inhalation treatment as the approved method of resuscitation. Under the conditions existing in our American cities today, every hospital ambulance should carry an inhalator. Every company of the city fire departments also should have one. When a fireman is overcome by smoke, a short inhalation will not only prevent illness and save him, perhaps, from a damaged heart, it also will enable him to go back to work and help put out the fire. As regards the use of an inhalator on the ambulance, experience is showing that it helps to save life, until the patient can be brought to the hospital, not only in cases of asphyxia, but in a wide variety of forms of respiratory failure, including even concussion of the brain.

In the treatment of cases of prolonged asphyxia in which the gas has been turned on all night, such brilliant results cannot be expected. We were at first doubtful regarding the extent of benefit that could be expected. Accumulating cases show, however, that even after prolonged asphyxia and after the loss of time involved in calling an ambulance and sending a patient to the hospital, the inhalation treatment may still be of great benefit in preventing such sequelae as nerve degenerations and the pneumonia, which heretofore has been common. I am indebted to Dr K. A. Martin¹⁵ for a report on a case of this sort at the New Haven Hospital.

An elderly man and his wife living in a small houseboat were asphyxiated by the fumes from a stove. The woman was dead when found in the morning, the man comatose. A couple of hours later, in the hospital, the man's blood still contained 52 per cent of carbon monoxide, and artificial respiration had several times been necessary to prevent death in the ambulance. Oxygen and carbon dioxide mixed in a Tissot spirometer were then administered for two hours. Normal breathing returned, and the carbon monoxide in the blood was reduced to 11 per cent. Four hours later, the patient was conscious, although stupid. He made an uneventful recovery, and walked home on the seventh day.

When we began using this treatment, we were at first afraid that it might overwork the heart, but experience has demonstrated that there is no such risk. The stimulation is a very mild one. Perhaps the most surprising and gratifying result has been the prevention of postasphyxial pneumonia, which this treatment evidently effects. Heretofore, as nearly as we can estimate, about one third of all persons severely gassed, but not dying under asphyxia, have later died in the hospital from pneumonia. We therefore made an examination of the lungs of animals that had been asphyxiated and found an extraordinary degree of congestion. This confirms an observation previously reported by David¹⁶ regarding oxygen deprivation. At our suggestion also several physicians have made careful physical examination of patients who, after severe but not fatal gassing, were brought to the hospital.

¹³ Fieldner, Straub and Jones. *J. Indust. & Engin. Chem.* 13: 55 (1921). Henderson, Yandell, Haggard, H. W., Teague, M. C., Prince, A. L., and Wunderlich, R. M. *J. Indust. Hyg.* 3: 79-92 (July) 1921. ¹⁴ Forbes, H. S. *J. Indust. Hyg.* 3: 137-146 (1921). Henderson, Yandell, and Haggard, H. W. *Health Hazard from Automobile Exhaust Gas in City Streets, Garages and Repair Shops.* J. A. M. A. 81: 385-391 (Aug. 4) 1923. ¹⁵ Forbes, H. S., Cobb, Stanley, and Fremont, Smith, Frank. *Cerebral Edema and Headache Following Carbon Monoxide Asphyxia.* *Arch. Neurol. & Psychiat.* 2: 264-281 (March) 1924.

¹⁵ Martin, K. A. Personal communication to the author.
¹⁶ David, O. *Ztschr. f. klin. Med.* 74: 404 (1912).

Extensive rales are found to be common. In view of these facts, it is highly significant that not a single patient in all those of whom we have record has developed pneumonia after being treated by the inhalation method. The pulmonary congestion, like the brain edema, seems to be cleared up by this treatment.

ELIMINATION OF VOLATILE POISONS

The most rapid and the most effective method of eliminating a volatile poison from the body is to administer an inhalation of oxygen or air containing enough carbon dioxide to increase the volume of breathing four or five times. Men overcome by fumes of gasoline and other volatile substances have thus been successfully treated. But the most interesting cases are those of acute alcoholic intoxication. I am indebted to Dr. Means¹⁷ for a report on two cases of this sort. The tests were made by two Harvard medical students, Hunter and Mudd, at the Boston City Hospital. Both the patients treated were comatose, and by actual measurement with a spiograph were breathing subnormally. Inhalation of air and carbon dioxide sufficient to cause deep, full breathing, for half an hour in one case and a total of about an hour in the other, restored consciousness and there was no subsequent nausea or vomiting.

Ethyl alcohol is burned in the body, but methyl alcohol is not. It may be accumulated from day to day until disastrous symptoms, particularly blindness, develop. Observations to be published by my associate, Dr. H. W. Haggard, indicate that the lungs are probably ordinarily almost the sole avenue of elimination of this poison. The absolute amount passed in the urine is very small. Stimulation of breathing by inhalation of carbon dioxide is, therefore, an almost specific treatment for this important form of poisoning. Dr. Haggard's experiments on animals indicate this strongly, but clinical observations are still lacking.

TREATMENT OF MORPHIN NARCOSIS

It is well established that death from morphin poisoning is due to failure of respiration. The respiratory center becomes relatively insensitive to the stimulus of carbon dioxide. In other words, more carbon dioxide is necessary in order to induce breathing. When morphin is administered prior to anesthesia, it sometimes happens that the patient is unusually sensitive to the drug and that respiration is dangerously depressed. In such cases, inhalation of carbon dioxide in oxygen or air has proved strikingly effective, when otherwise the patient would almost certainly have died. From several hospitals I have received reports of lives saved in this way.

INHALATION OF CARBON DIOXID AFTER ANESTHESIA

The use of inhalations containing carbon dioxide to stimulate respiration and accelerate the elimination of volatile anesthetics is now on a firm basis of proved clinical value. It has saved a number of lives in several different hospitals. The most complete test of this procedure yet published is that by White¹⁸ from the Massachusetts General Hospital. He has confirmed the results of Haggard, Coburn and myself¹⁹ in all practical

aspects. In what I shall say on this subject, I am indebted also to Dr. Sword,²⁰ who in his service as anesthetist at Grace Hospital, New Haven, has used carbon dioxide inhalations in more than 100 cases of all types. He tells me that he finds it particularly useful as an adjunct to ethylene anesthesia.

After anesthesia, respiration is often so much depressed that the elimination of the anesthetic is very slow, especially when considerable amounts of ether have been used, and the patient undergoes a prolonged period of partial asphyxia. The inhalation of carbon dioxide in air or oxygen induces an increase in the volume of breathing, which rapidly ventilates the anesthetic out of the body. It thus prevents the occurrence of the usual period of partial asphyxia. In practice, it is found that vomiting, nausea and gas pains are greatly decreased. Arterial pressure is quickly restored to a normal level and the blood alkali is brought back to normal.

White has reported cases in which, after brain operation, respiration was failing and life was saved by gradually lessening inhalation of carbon dioxide for several hours. Sword has found that cases of otherwise uncontrollable postoperative hiccup were controlled and the patient's life saved by inhalation of carbon dioxide. He reports also that in obstetric cases, after prolonged analgesia with gas oxygen and ether previous to delivery, when the infant has not breathed spontaneously and the routine methods have seemed to fall short, oxygen and carbon dioxide have been of value in initiating spontaneous respiration. Both White and Sword have found that whenever, in the course of anesthesia and operation, respiration shows signs of failure, the addition of carbon dioxide to the anesthetic has been effective in restoring full breathing. In a thorough experimental analysis of ether anesthesia, Haggard²¹ has shown that carbon dioxide should be used also to hasten the beginning of anesthesia.

The occurrence of acidosis following anesthesia has been alleged in some quarters²² as a reason against the use of carbon dioxide. This is a purely theoretical point, the objection is really quite unsound and unjustified either in theory or in fact. It arises from the mistaken conception which many biochemists now seem to hold, that blood in a beaker may be taken as equivalent to blood in the body. They forget that the one is not subject to vital control but is a mere chemical system while the other is subject to those regulations and adjustments which are the essence of the living organism.

It is true that the alkaline reserve is often considerably decreased after anesthesia. All investigators have found this.²³ I believe that I was one of the first to observe it, long before the present terminology was in use.²⁴ It has been demonstrated also that the hydrogen-ion concentration of the blood at this time is increased. This means simply that respiration is relatively depressed for if respiration were increased as much as the alkali is decreased, the hydrogen ion concentration would be normal. It is true that if blood of low alkali content is exposed to an atmosphere high in carbon dioxide its hydrogen-ion concentration is greatly increased. This is true in a beaker, but it is practically not true in the body, or true only temporarily, for, as Haggard and I have shown, the inhalation of carbon dioxide rapidly

17 Means J. H. Personal communication to the author later published by Hunter, I. T. and Mudd, S. G. Carbon Dioxide Treatment in Acute Alcoholic Intoxication. Boston M. & S. J. 190 971 (June 5) 1924. Compare The Treatment of Acute Alcoholic Intoxication. editorial J. A. M. A. 83 199 (July 19) 1924.

18 White J. C. Deoxygenization by Means of Carbon Dioxide Inhalations. Arch. Surg. 7 347 370 (Sept.) 1923.

19 Henderson, Yandell, Haggard, H. W. and Coburn, R. C. The Therapeutic Use of Carbon Dioxide After Anesthesia and Operation. J. A. M. A. 74 783 786 (March 20) 1920.

20 Sword, B. C. Personal communication to the author.

21 Haggard, H. W. The Absorption, Distribution and Elimination of Ethyl Ether. J. Biol. Chem. 50 753 1924.

22 Reimann, S. P., Bloom, G. H. and Reimann, H. A. Administration of Carbon Dioxide After Anesthesia and Operation. J. A. M. A. 76 437 (Feb. 12) 1921.

23 Van Slyke, D. D., Austin, J. H. and Cullen, G. E. J. Biol. Chem. 53 277 (Aug.) 1922 (full literature). Cullen, G. E., Austin, J. H., Kornblum, K. and Robinson, H. W. J. Biol. Chem. 56 625 (June) 1923.

24 Henderson, Yandell and Scarbrough, M. M. Acapnia as a Factor in the Dangers of Anesthesia. Am. J. Physiol. 26 260 1910.

recalls alkali to the blood." Inhalation of carbon dioxide is, in fact, an effective method, after anesthesia and after carbon monoxide asphyxiation, for restoring the blood alkali and the hydrogen-ion concentration to normal values. It is generally assumed that, in so-called acidosis, a part of the blood alkali is neutralized by organic acids, such as lactic acid. From recent observations of Anrep and Cannon,⁵ it appears that the inhalation of carbon dioxide by temporarily increasing the hydrogen-ion concentration leads to a rapid burning up of lactic acid in the tissues. The blood alkali is thus increased. The effect of carbon dioxide inhalation in restoring the blood alkali to a normal value and overcoming postanesthetic acidosis may be due to such a process as Anrep and Cannon have demonstrated experimentally. Whatever the process may finally prove to be, the inhalation of carbon dioxide after anesthesia is certainly extremely beneficial to the patient.

OXYGEN INHALATION IN PNEUMONIA

It seems to be accepted that, in acute cases of pneumonia, oxygen inhalations may shift the balance as between a fatal outcome and recovery. There is as yet, however, no apparatus available and generally accepted as an efficient inhaler for this purpose.

It is obvious that, under the conditions of respiratory distress existing in pneumonia, carbon dioxide should not be added. But I have received from a number of my clinical friends, in various places, the suggestion that the inhaler which we have used could be effectively adapted to administering oxygen in pneumonia. Of course, when it can be afforded, an oxygen chamber such as that in use in the hospital of the Rockefeller Institute is preferable. But not many hospitals can afford this luxury, and such a chamber has disadvantages of its own, especially the danger of fire. I have mentioned this matter now merely to say that the H. H. inhalator is already in use in some hospitals for the administration of oxygen and that we have arranged for a hospital type of this apparatus which can be used either with oxygen plus carbon dioxide or with oxygen alone. It is shown among the exhibits at this session.

CONCLUSION

Heretofore, a medical man suddenly confronted by a patient in nearly any one of the conditions mentioned above has generally confined himself to administering a hypodermic injection. This is the ambulance physician's favorite contribution to resuscitation. I have given no space whatever, not a single word, to this matter in this paper, and this amount of space exactly expresses my estimate of its value to the patient.

Physicians must learn the principles and methods of resuscitation—both the prone pressure method of artificial respiration and the principles involved in counteracting respiratory failure by inhalation therapy.

The chief principle of this therapy is that of using a mixture of oxygen and carbon dioxide. Carbon dioxide to stimulate the respiratory mechanism to full deep breathing, to flush and flood the blood in the lungs with oxygen, and to ventilate out of the blood any volatile toxic substance. To combat respiratory failure in this way is to use Nature's own agencies to assist Nature toward recovery.

Occasionally a clever intern may extemporize resuscitation apparatus out of a tank of carbon dioxide from the pathology laboratory, one of oxygen from the anesthetist, and a spirometer from the metabolism room, and thus may save a life. It is hard work, but it can be and has been done. In general, however, if the methods here described are to accomplish all that they

should, all general hospitals must be equipped with inhalators specially designed for this purpose and the staff must become accustomed to using them.

4 Hillhouse Avenue

ABSTRACT OF DISCUSSION

ON PAPERS BY DRs MACLACHLAN AND HENDERSON

MR CHARLES B. SCOTT, Chicago. The National Electric Light Association will be glad not only to cooperate with the medical profession in the research referred to by Dr Henderson, but also to contribute to it.

DR J. BIRNEY GUTHRIE, New Orleans. Dr Henderson put us in his debt several years ago, by pointing out the utility of combining carbon dioxide and oxygen inhalation in the resuscitation of the asphyxiated. It seems that right now we have to make a campaign to have the procedures concerned with resuscitation established in the various activities involved. Dr Henderson has been a very busy man with many other things besides this, and it is our duty to aid him in the matter of propaganda in this direction. Often we see work of great value lapse for years before it comes into use. This very simple thing we should stamp with our approval and do what we can to secure its adoption by the hospitals and by gas companies and various other interested activities.

DR J. H. WILMS, Cincinnati. A few years ago, I had a case of intestinal obstruction in an infant about 3 months old. It had stopped breathing for sixteen minutes and apparently was dead, so I immediately made a postmortem examination. In feeling under the diaphragm, I felt a faint flutter of the heart and I had the nurse carry out artificial respiration. The child was resuscitated and lived a week. The principle was that after sixteen minutes the child began to breathe normally. When I was an intern, a patient with laudanum poisoning was brought to the hospital. We did artificial respiration on the man for nine hours, in shifts, and the man made a very nice recovery. In experimental work in making intravenous injections with magnesium sulphate, according to Meltzer's method, and later antidoting with calcium chloride, we stopped the breathing. Artificial respiration was then instituted, the magnesium sulphate had paralyzed the respiration, and when we gave the antidote, calcium chloride, in time the respiratory centers were restored, but the wide application of artificial respiration is with ether and chloroform paralysis of respiration. Ether and chloroform, like many other poisons, paralyze the respiration by the effects on the respiratory center, and many patients are allowed to die when they could be nicely resuscitated by artificial respiration.

MR WILLS MACLACHLAN, Toronto. In connection with the whole matter of manual resuscitation, it has been my opportunity to train a great number of men, or to have my assistants train them, in this method. I find that in training these men it is absolutely necessary to teach them one method and one method only. If one attempts to teach them two methods, one is certain to run into trouble. Also, we have found that in teaching the laity it is necessary to be very explicit, for instance, in telling them to put their little finger on the lowest rib, because it can be readily shown that by simply shifting the hands 2 or 3 inches up, or down 2 or 3 inches, one gets a tremendous difference in the ventilation of the lungs. One point that in the hurry I did not emphasize is that this method is just as effective in the resuscitation from drowning and this point cannot be overemphasized. No doubt, in this country as it is in Canada, the fatalities from drowning exceed the fatalities from any other accidental cause, and the necessity of training the boys and girls in our schools in this simple method of resuscitation is apparent. The other point that I would stress in the training of men is the necessity of having them continually practice the method. In case of an accident, they will lose their heads. It is very difficult to get an exact report of any severe accident from laymen. For that reason, we train them and train them and train them, and make them practice and make them practice, so that when they have lost their heads they do the matter automatically for a few minutes until they can carry on for themselves. In the summing up, so far as electrical shock is concerned, the important

point is to get to work, as soon as one possibly can, carrying out resuscitation wherever one finds the victim and not moving him unnecessarily, because time will be wasted. We have not found it necessary to pry open the jaws, they will usually slacken later on and one can clear them out then. The resuscitation should be carried out in detail, and one should not give up too soon. We have long cases—nine hours was mentioned a moment ago—we have cases of two and a half hours from electrical shock, we have cases of men submerged for from fifteen to twenty minutes, taken out, and in an hour and five minutes resuscitated. Then when the patient is coming along nicely in his breathing, he should be transported, lying down and put to bed for over night at least. Of course, if badly burned, he may be in the hospital for months. I should like to thank the American Medical Association, in the name of the National Electric Light Association and also the American Gas Association, for the opportunity of presenting this subject at your scientific assemblage.

DR. YANDELL HENDERSON, New Haven, Conn. I would again confirm fully what Mr. MacLachlan has said. It is essential that we should adhere to one method, and that there should be no divergence from the officially published directions. It is not perhaps of extreme importance technically, whether the hands are placed exactly one way or another, but uniformity of directions is of extreme importance in the training of school children, of the police and fire departments of the men working at the bathing beaches and so on. As we now have it the method is the result of a very long series of investigations and of a large amount of practical experience and I hope therefore that the medical profession will stand solidly back of exactly the procedure that the electric light industry has adopted. We must also teach the young physicians on the ambulances and indeed, the entire medical profession, that in cases of drowning or possible drowning and of electrical shock the victims should not be declared dead and efforts at resuscitation should not be stopped until rigor mortis has set in. I confirm everything Mr. MacLachlan has said on this matter, because patients have been resuscitated, as he has told us, after six or eight hours of work. I hope that one of the results of this meeting and of the publication of these papers in *THE JOURNAL* will be that the physician called to an accident or the young physician on the ambulance will not hereafter say, "The patient is dead, leave him alone," merely because he is not breathing. It would have been possible to save many lives now lost. As regards the inhalation of carbon dioxide, for asphyxia, alcoholism, etc., it is essential that apparatus be provided in the hospital before the accident occurs. It is true that I know of one case in which an efficient intern carried the patient to the hospital, and then ran to the department of pathology and got a tank of carbon dioxide and to that of surgery and got a tank of oxygen and, being very energetic, he managed to combine the two with a metabolism spirometer, and saved a life. But in general one cannot wait until a gassed patient, or a patient of any of the other types I mentioned, is brought into the hospital. One must be prepared previously with apparatus ready to administer oxygen and carbon dioxide. Furthermore, the apparatus shown at this meeting has been designed so that it can be used for many purposes. It can be used effectively for administering oxygen in pneumonia, for the treatment of failure of respiration in anesthesia, for the treatment of illuminating gas poisoning, for the treatment of the increasing number of people gassed with carbon monoxide from automobiles, and it can be used to maintain respiration in the morphin case so that artificial respiration will not be necessary. But all these uses require that an inhalator be obtained or constructed beforehand, and that it be ready to treat a case when the patient is brought to the hospital.

Diphtheria Incidence in 1923—Diphtheria was less prevalent during 1923 than during the last few years. Fifty-nine thousand cases were reported by seventy-seven cities, while the estimated expectancy, which is lower than the average number of cases, was more than 63,000 cases. For 1923 the cities reported 197 cases per thousand population, while in 1922, 225 cases per thousand were reported for seventy-three cities.—*Pub. Health Rep.* 39 1667 (July 11) 1924

ARTIFICIAL RESPIRATION IN ELECTRIC SHOCK AND GAS POISONING

CECIL K. DRINKER, M.D.

BOSTON

Those of us who are engaged in such aspects of physiology as bring us in touch with practical problems in respiration are made aware of the fact every day that, not only are persons being overcome in novel and curious ways, but novel and curious remedies are being suggested for their revival. The lectures of Sir Arthur Keith on artificial respiration, delivered in 1909, call attention to the variety of methods used in England since the foundation of the Royal Humane Society in 1774, and these lectures are a commentary on our present day experience. He recounts the vogue of rectal instillations of tobacco smoke as a means of resuscitation after drowning. This method received high endorsement. Testimonials from eminent authorities seemed to prove its success. Similarly, a few weeks ago, I was pestered rather persistently to endorse a method of resuscitation which had as its basis an elaborate system of portable bathtubs in which patients could be rapidly subjected to extreme changes in temperature it being thought that the shock of such changes must result in benefit.

I hear, too, from my friends in the electric light industry of the efficacy of what is called countershock in resuscitation. By this term is meant the sudden forcible jarring of the patient by pounding him on the soles of his feet with the flat of a hatchet, dropping him on the ground, or giving him some severe sensory stimulus which it has been thought must help in starting respiration. I would not have any one think that I mention such examples as this in order to cast disparagement on them. Each person who makes a suggestion of this kind is actuated by a sincere desire to benefit his fellows, and his suggestion should be dealt with either through the use of existing knowledge or by means of experimental trial.

It is not a new thing then to see novel proposals for resuscitation, and, in the face of the multiplicity of such proposals, it is not surprising to see certain ingenious pieces of apparatus placed on the market commercially, and supported with ardent vigor and conviction not only by the manufacturers but also by members of the medical profession.

A few years ago, I was made chairman of a commission to examine methods of resuscitation in gas poisoning, and, as this commission closed its work after two years' profitable activity, it was also called on to pass on the general regulations for resuscitation issued by the National Electric Light Association. I had occasion, during the period of the work of the commission, to examine the field problems in resuscitation which must be met. I was appalled at the amount of gas poisoning with which one must deal in a large city. While the great fraction of this poisoning is suicidal, the gas industry cannot and does not evade the fact that it is the cause of many grave accidents, and I can bear testimony to the care and eagerness with which the gas industry has endeavored to meet its responsibility to the public in this matter. Dr. Cannon and I directed an analysis of gas poisoning cases that have occurred in certain of our large cities. We found that gassed individuals were either dead when discovered or were apt to be breathing either rapidly or feebly depending on the degree of poisoning that existed.

Few or none were discovered whose circulation was reasonably intact and whose respiration had ceased or had become so profoundly enfeebled as to be functionally negligible. It was apparent, both from the figures supplied by gas companies and in the study of hospital case and police cases, that first-aid crews in gas poisoning, while they required knowledge of artificial respiration to be applied in certain very rare instances, needed a serviceable method for getting oxygen into the lungs and so freeing the system from carbon monoxide with the greatest possible rapidity. In order to accomplish such an end, two courses were open. The patient's breathing might be stimulated so that he would himself take oxygen from an appropriate reservoir, or oxygen might be delivered to him by some sort of pumping device. Drs. Henderson and Haggard, the commission felt, and experience has amply justified this feeling, provided the logical and best method of resuscitation in gassing that has ever been available, by falling into accord with the first alternative and using the 5 per cent carbon dioxide and 95 per cent oxygen mixture.

It was my province to test out the most prominent of the devices then on the market for pumping air or oxygen into patients. Two machines, the lungmotor and the pulmotor, received extensive attention at our hands. Both these devices deliver air or any gas mixture desired through a mask, and it is the general idea that this air reaches the patient's aveoli. It is removed by suction. Inspiration is thus a positive blast, expiration is a somewhat forcible suck. Both machines are arranged so that it seems impossible to do patients much damage by overinflation, and we were confident that this source of accident was negligible. We found, on animals and on ourselves, that by careful adjustment of the mask, and discriminating use of the lungmotor, we could ventilate quite successfully with it, but we believe that adequate and continuous ventilation by the use of the lungmotor or the hand-controlled pulmotor requires the presence of some one expert on respiratory matters. The automatic pulmotor, we found, delivered oxygen and air adequately to the lungs only under extraordinarily favorable conditions, and we are sure that this is a device on which no certain reliance can be placed. It was therefore the general opinion of the commission that devices now available for driving air or oxygen into the lungs by positive pressure were inadequate and unphysiologic.

I trust, and I have reason to feel sure, that the wide publicity given the subject of artificial respiration during the war, and by such organizations as the American Red Cross, the American Gas Association, and now the American Medical Association, will result in teaching individuals and communities that, so far as gas poisoning is concerned, adequate rescue work must come through training in the Schafer method of artificial respiration, supplemented, wherever possible, by the oxygen-carbon dioxide inhalation.

In regard to resuscitation from electric shock, the problem is somewhat more simple. Death ensues from cessation of respiration and true asphyxia, the circulation remaining for some moments after respiration ceases, or occasionally respiration continues and the heart muscle fibrillates. This fibrillation is generalized and is fatal. There may be an indefinite number of combinations of these two conditions. When, however, ventricular fibrillation takes place, it is even doubtful whether, in man, it ever stops. The circumstances surrounding electric accidents make it possible to reach

many patients who fall into the first class. These require air, and require air immediately. There is no time to obtain apparatus of any sort, nor is any apparatus called for. The electric light industry and the electric industry in general cannot go too far in educating employees and the public in the Schafer method of artificial respiration and in placing entire reliance on it. Occasionally, individuals appear who require repeated applications of artificial respiration, voluntary breathing starting and stopping most alarmingly. In such persons, it is possible that the oxygen carbon dioxide inhalation may be beneficial. It has, however, been shown that the prone pressure method of artificial respiration will ventilate sufficiently to sustain life over long periods, and there seems no justification for the idea that mechanical devices are called for in such cases.

CONCLUSION

We witness today the presentation to the public of many strange and some very ingenious suggestions for resuscitation. When we give all these methods a competent analysis, we are reduced to the selection of the prone pressure method of resuscitation as our great reliance for immediate emergency, and we turn to the oxygen-carbon dioxide inhalation method devised by Henderson and Haggard as the physiologic antidote for carbon monoxide asphyxia, and through simple inhalation apparatus practically allow the patient to administer this mixture to himself. It is conceivable that physiologists may some day devise a positive pressure artificial respiration apparatus which, even in comparatively unskilled hands, can be relied on to ventilate the lungs. Our examination of such devices as are now on the market has failed to disclose any that prove to be of value.

Clinical Notes, Suggestions, and New Instruments

PARINAUD'S INFECTIOUS CONJUNCTIVITIS

E. A. WALDECK, M.D., MILWAUKEE

Since 1888, when Parinaud first described this form of conjunctivitis, very few instances have been reported. It was my good fortune to study such a case.

REPORT OF CASE

An American school girl, aged 13 years, came to the office, Nov. 22, 1923, with a swelling of the left upper eyelid and the left side of the face which had been present for the past three weeks. The condition started about four weeks previously as a "cold in the left eye," characterized by redness of the conjunctiva, tearing, and the adhesion of the lids by a purulent discharge in the morning. In a few days, this acute inflammatory condition of the left eye subsided, but the upper lid began to swell, and continued to do so until the ptosis interfered with vision. One week after the swelling in the lid began, a swelling started in the left preauricular region, which finally included the entire left side of the face and the neck. The right eye never showed any symptoms, and the general health was excellent and unassociated with any constitutional disturbances.

The family and personal histories were apparently negative. No tuberculosis, cardiorenal diseases or acute infections were evident.

The home sanitation was good, except for the freedom allowed to three pet cats. One of these cats, Dec. 6, 1923, developed sore eyes and swollen glands of the neck. This cat was taken to the pathologic laboratory for observation.

The ocular examination, when the patient first visited the office, showed the right eye normal in all respects. The left

eye had marked ptosis of the upper lid due to an inflammatory swelling and thickening of the lid. The bulbar conjunctiva was slightly injected and chemotic. The chemosis extended to the limbus, leaving the cornea clear and free from inflammation. When the upper lid was everted, the palpebral conjunctiva showed many yellowish red polypoid elevations on a thickened, injected, nonulcerative surface, accompanied by a mucofibrinous discharge. At the fornix the elevations were larger and pedunculated. The palpebral conjunctiva of the lower lid showed merely a simple conjunctivitis free from elevations. In both eyes, the lacrimal apparatus was normal and the pupils were equal and regular, with prompt reaction to light and convergence and vision 20/20. The left preauricular, parotid, anterior superior cervical and submaxillary glands were enlarged, indurated and painful on deep pressure. No fluctuation was ever evident.

The laboratory report on the smears revealed no bacteria. Cultures showed no growth. An excised follicle taken from one of the pendulous follicles in the fornix showed merely a simple follicular hyperplasia. The leptothrix of Verhoeff, which has been found in many of the cases reported, could not be demonstrated. The cat, which was under observation, recovered in a few days from the inflammatory condition in the eyes, and though repeated eye smears and cultures were taken, no definite bacterial cause could be found.

Our method of treatment by daily application of ultraviolet rays, the short quartz rod in direct contact to the follicles, gave gratifying results in that the clinical course of this disease terminated in a much shorter time than usually ascribed to this condition. The follicles were exposed about twenty seconds to each area. The first treatment was given November 23, and the follicles treated shrunk and never returned to their original size. By December 15 the follicles were gone, and only a slight roughness and thickening of the conjunctiva remained. By December 20, the thickening of the lid and the swelling of the anterior cervical glands had disappeared. The preauricular and parotid glandular enlargement was not evident after January 15. When the patient came to the office one month later, February 15 examination showed no ocular pathologic or adenopathic condition. The entire clinical course of this case was about two months, which was much shorter than most cases previously reported.

204 Grand Avenue

THE PRESENCE OF HYMENOLEPIS NANA IN PORTO RICO*

ROLLA B. HILL, M.D. AND AUGUSTIN SANCHEZ, M.D.,
SAN JUAN, PORTO RICO

Hymenolepis nana has been reported so often in the United States that it is now regarded as one of the commonest tape worms infesting man. It has not, as far as we have been able to ascertain, been reported before from Porto Rico. The cases here presented should therefore be of some interest as further indicating the cosmopolitan distribution of this parasite.

In examining the forty-seven inmates of the boys orphan home in Hatillo for hookworms, the eggs of *Hymenolepis nana* were discovered in the stools of three of the boys. This home is managed entirely by local people, and admits boys from 6 to 12 years of age. One of the boys had been in the home for three years, the other two for two years. None of the boys or the director have ever been off the island. Their only contact with outside people is in the local schools.

These three boys were from 10 to 12 years of age. They had all been examined and treated one year before for hookworms without cestode eggs having been found. They had no symptoms referable to tapeworm or hookworm infestation. As afterward proved, they were very lightly infested with the latter parasite.

Treatment for hookworm infestation was given to two of the boys. It consisted of one treatment of 15 cc of carbon tetrachlorid, followed in a week by a treatment with 1 cc of oil of chenopodium. The forty-eight hour stools from

each treatment were washed and examined, but no tapeworms were found, although a few hookworms were recovered. It is possible that some tapeworm segments were overlooked since they are very difficult to distinguish. Subsequent microscopic examination, however, still showed the eggs of the cestode parasite.

Oleoresin of aspidium was then given, 1 gm. in divided dose preceded for twenty-four hours by a milk diet, and followed in two hours by a purge of magnesium sulphate. All three boys were treated. The resulting stools for twenty-four hours were saved, washed, strained and examined. Owing to their small size, great transparency and fragility, it is probable that some worms or segments were missed, although all care was used in the search for them.

From one boy, we recovered segments from approximately 100 worms, and from the other two, four worms. In many cases, the small heads were missing. These cestodes corresponded in all particulars with the description of *Hymenolepis nana* in various textbooks, and with our knowledge of them from specimens seen elsewhere.

While this parasite has not been reported before from Porto Rico, yet it seems clear that it has gained a foothold in the island and will probably be found with relative frequency hereafter.

TREATMENT OF PRURITUS ANI, VULVAE AND SCROTI

M. P. MOORER, M.D., ASHEVILLE, N. C.

Under thorough infiltration of the skin and subcutaneous tissue extending one-half inch beyond the area affected, with 0.5 per cent quinin and urea hydrochlorid solution, itching is at once arrested, excoriations rapidly heal, and within a few days the skin resumes its normal smoothness and luster. Anesthesia, however, persists for from several days to as many weeks, and, at the expiration of this period, a second and sometimes a third infiltration is or may be required. It has not been necessary to employ a fourth infiltration in any case thus far treated, as the causative factor is searched for, and, if found, eliminated during the days of freedom from itching produced by this simple measure. Occasionally, one injection suffices and the patient remains away for months, but he finally returns to have skin tags removed or other operative rectal procedure which he was told in the first instance would be needed to insure permanent relief, attended to.

The technique consists in rendering the part clean with water, a good soap and a soft sponge, application of a solution of mercurochrome-220 soluble as an antiseptic, and the injection of a small area with 1 per cent procain as a starter. The remainder of the diseased skin is then infiltrated, after which the underlying subcutaneous structure is ballooned out with quinin and urea hydrochlorid solution until the patient complains on resuming a chair that he is "sitting on a cushion." The precautions to be observed are as follows:

1. A decided neurotic element exists in all pruritus cases, therefore, it is wise to administer hypodermically one-fourth grain (0.01 gm.) of morphin before beginning this treatment, for the prevention of shock, otherwise profound depression, resembling greatly the first few hours succeeding a grave surgical operation, is likely to follow.

2. Not more than 10 cc of 1 per cent procain should be used but quinin and urea hydrochlorid solution from 0.25 to 0.5 per cent strength may be used in any necessary quantity, as much as 200 or 300 cc (quinin and urea hydrochlorid solution in greater than 0.5 strength may produce a slough or an unpleasant induration).

Results in a number of cases have been as good as with a Ball or Lynch operation, and infinitely better than with the crutery.

The pressure on the terminal nerves produced by the forcible injection of fluid in large amount brings about a temporary paralysis equal in duration to that produced by severance of their filaments with a knife, and to the mind of the average patient is much more acceptable.

194 Victoria Road

* From the Bureau of Uncinariasis, Department of Health.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY

MEDICINAL DYES

The dyes which have been introduced in medicine, for the most part in the last decade, are practically all organic synthetics. Roughly they may be divided into five classes: (1) the azo dyes, of which scarlet red medicinal and scarlet red sulphurate are described in New and Nonofficial Remedies (these have been in use for considerable time), (2) the acridine dyes, such as acriflavine, neutral acriflavine and proflavine, (3) the fluoresceine dyes, usually combined with the metal mercury, such as mercurochrome-220 soluble and flumerin, (4) the triphenylmethane or rosaniline series, which comprise a large list of substances used in the industries, extensively in laboratory practice and more recently in medicine such as gentian violet crystal violet methyl violet and fuchsin, (5) miscellaneous dyes, such as methylene blue, phenolsulphonaphthalein and tetrabromophenolphthalein. Much confusion has existed concerning the composition of dyes, various manufacturers of commercial dyestuffs making similar dyes of varying composition both qualitatively and quantitatively, usually the commercial dye contains a diluent, such as dextrin or salts and is judged by tinctorial power. In order to obtain comparable results when employed clinically, the dyes should be of constant composition, preferably without diluent.

Triphenylmethane (Rosaniline) Dyes

Of the derivatives of triphenylmethane and its homologue tetraphenylmethane the most interesting medicinally are those which result from the introduction of amino groups forming pararosaniline (triaminotriphenylcarbinol $(\text{NH}_2\text{C}_6\text{H}_4)_3\text{COH}$) and rosaniline (triaminodiphenyltolylcarbinol $(\text{NH}_2\text{C}_6\text{H}_4)_2(\text{CH}_2\text{NH}_2\text{C}_6\text{H}_4)\text{COH}$). On treating rosaniline with hydrochloric acid, the hydroxyl of the carbinol group is split off, permitting the formation of a quinoid group, thus is formed a typical dye known as fuchsin, $\text{NH}_2\text{C}_6\text{H}_4\text{CH}_2\text{NH}_2\text{C}_6\text{H}_4\text{C}_6\text{H}_4\text{NH}_2\text{Cl}$. The red color of pararosaniline chloride or fuchsin is changed to violet by the entrance of a methyl group in the amino groups, the intensity of the violet color increasing with an increasing number of methyl groups. Thus, there is the closely related gentian violet, crystal violet and methyl violet. Gentian violet is a mixture of pentamethylpararosanine chloride and hexamethylpararosanine chloride, by some it is defined as a mixture of methyl violet and crystal violet. Crystal violet is a relatively pure form of hexamethylpararosanine chloride, methyl violet is considered to contain mostly pentamethylpararosanine chloride with some of the hexaderivative and probably some tetraderivative also. Hence, one definition of gentian violet is practically the same as the other. It seems likely that in therapeutics it will be found that there is little difference between the penta and hexa derivatives and the mixtures of the two, so that the one most easily obtained in pure form (crystal violet) will be the one most used. The material which has been used by the workers so far, however, has been gentian violet.

Action and Uses—The use of gentian violet in therapeutics has recently been proposed by Churchman, who found that solutions of the dye had a selective action on certain bacteria and that the majority of gram-negative organisms survived exposure to gentian violet solutions in strengths far in excess of that required to kill gram-positive organisms, in fact, the action of the dye is sufficiently selective so that often a 'strain within a species' is not affected. Churchman's work, however, was done largely with a product containing dextrin as a diluent. Gentian violet is stated to possess properties of great penetration, to be bactericidal also bacteriostatic in vivo toward the selective organisms. Its chief application has been in the treatment of affections of the pleural cavity and of the joints particularly in empyema and arthritis—affections in which staphylococci, *B. pyocyaneus* and *B. diphteriae* are the causative agents. Young and Hill have also proposed the use of gentian violet intravenously in staphylococcus septicemia, chronic cystitis (from staphylococcus),

osteomyelitis (with staphylococcus present). Intravenous injection of the dye in doses of 5 Mg per kilogram of body weight causes marked cyanosis which persists for a few hours after injection, owing to the intense color of the dye. In feeble patients, cardiac stimulants should be given. Churchman also has found that acid fuchsin (the acid sodium salt of fuchsin disulphonic and trisulphonic acids) is in some respects the opposite of that of gentian violet in selective power, a stained culture of *B. prodigiosus* being killed by the acid fuchsin, while the gram positive *B. anthracis* would be unaffected. The selective action of acid fuchsin, however, is clearly brought out only when the organisms are exposed to the dye with slight elevation of temperature (about 50°C). Acid fuchsin is incompatible with gentian violet and the compatibility of all mixtures of dyes should be determined before any combination is prepared. Churchman claims, however, that acriflavine possesses much the same selectivity as acid fuchsin, so he has proposed the use of a mixture of these two dyes. The effectiveness of such a solution has not yet been established clinically. None of the rosaniline dyes are strong bactericides.

GENTIAN VIOLET MEDICINAL—A mixture of pentamethylpararosanine and hexamethylpararosanine chlorides.
Actions and Uses—See preceding article.

Dosage—For direct application a solution of from 1 500 to 1 1,000 may be employed for instillation a 1 10,000 solution. For intravenous use Young and Hill recommend 5 Mg per kilogram of body weight injected in 0.5 per cent dilution.

Gentian violet occurs as a dark green (bronze) powder or greenish glistening pieces having a metallic luster. It is soluble in alcohol or chloroform, insoluble in ether. Its solution in alcohol or chloroform has a deeper hue than the same strength aqueous solution. Concentrated sulphuric acid dissolves methyl violet with an orange to brownish red color on slowly diluting this solution in distilled water the solution assumes a brown then green and finally a blue color.

Add drop by drop tannic acid solution to a solution of gentian violet (1 500). A deep blue precipitate forms (basic color). To 5 Cc of an aqueous solution of gentian violet add a few drops of hydrochloric acid and about 0.5 Gm of zinc dust rapid decolorization ensues. Place a few drops of the decolorized solution near a few drops of ammonia water on filter paper the zone of contact assumes a blue color.

Add hydrochloric acid slowly drop by drop with agitation to an aqueous solution of the dye (1 500) the violet color changes gradually to bluish green, green and finally to brownish yellow, the solution remaining clear. Now dilute gradually the solution the color changes in reverse order as the hydrogen ion concentration is increased.

Dissolve 1 Gm of the dye in boiling alcohol, cool, filter through Gooch filter, wash residue with alcohol until washings cease to be colored violet and dry at 100°C. The weight of insoluble material corresponds to not more than 1 per cent (dextrin). When tested for arsenic according to the U. S. Pharmacopeia IX, the product should meet requirements for the test for arsenic (Part II Test No. 1).

Incorporate 1 Gm of gentian violet not more than 0.01 Gm of ash remains.

Gentian Violet Improved Medicinal—A brand of gentian violet medicinal-N N R.

Manufactured by The Coleman and Bell Company, Norwood, Ohio. No U. S. patent or trademark.

Gentian Violet Medicinal—"National"—A brand of gentian violet medicinal-N N R.

Manufactured by The National Aniline and Chemical Company, New York. No U. S. patent or trademark.

INSULIN-STEARNS (See THE JOURNAL, June 14, 1924, p. 1937).

The following dosage form has been accepted:
Insulin Stearns Quadruple Strength 5 Cc vials containing 40 units in each cubic centimeter.

SULPHARSPHENAMINE-SQUIBB (See New and Nonofficial Remedies, 1924, p. 58).

The following dosage forms have been accepted:

Sulpharsphenamine Squibb 1 Gm Ampules
Sulpharsphenamine Squibb 3 Gm Ampules

DIPHTHERIA TOXIN-ANTITOXIN MIXTURE (See New and Nonofficial Remedies, 1924, p. 298).

E. R. Squibb and Sons, New York.

Diphtheria Toxin Antitoxin Mixture (New Formula) Squibb—(See New and Nonofficial Remedies 1924 p. 299). Also marketed in packages of thirty 1 Cc ampules.

ANTISTREPTOCOCCUS SERUM (See New and Nonofficial Remedies, 1924 p. 304).

E. R. Squibb and Sons, New York.

Antistreptococcus Serum Squibb (See New and Nonofficial Remedies 1924 p. 305). Also marketed in packages containing one 10 Cc syringe in packages containing one 50 Cc vial.

Antistreptococcus Serum Rheumatic Squibb (See New and Nonofficial Remedies 1924 p. 305). Also marketed in packages of one 20 Cc vial in packages of one 50 Cc vial.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 6, 1924

THE FATE OF MORPHIN IN THE BODY

Morphin was discovered by Serturner of Hanover in 1805, and the first demonstration that this alkaloid, taken into the body, may reappear in the urine was made, in 1827, by Barnet. In view of this long acquaintance with a drug of such outstanding importance, it is indeed surprising that so little has been accurately ascertained regarding the rate of its elimination from the organism. It has been argued that, as cumulation does not occur when morphin is taken several times daily by habitues, we must suppose that they, at least, are capable of destroying or excreting the drug fairly rapidly.¹ One might expect that the essential facts could have been established long ago by certain obviously indicated procedures. The morphin introduced into the body should be present in the excreta or the tissues, unless it has been destroyed. Biochemical analysis ought to give the answer. Yet there has been considerable difference of opinion, not alone about the residual distribution of the alkaloid when it is taken into the body, but also respecting the paths of elimination of the unchanged drug. Some investigators have found it only in the feces—an observation that seems quite in harmony with the demonstrated excretion of morphin into the stomach after its subcutaneous administration. Other workers, in turn, have not failed to detect the substance in the urine.

One drawback to securing more consistent information has resided in the imperfections of the analytic methods. Each time that they have been improved, a better understanding of the problems involved seems to have been secured. Recently, for example, Takayanagi,² working with an improved technic in the pharmacologic institute at the University of Heidelberg, has observed that the extent of excretion of morphin in the urine may, under certain circumstances, greatly surpass the elimination through the alimentary tract with the feces. When a single dose of

the drug is given, the urinary excretion is delayed and slow. In cases in which it has been previously administered, the urinary elimination, following a subsequent dose, may be accelerated. When tolerance to the drug has been established, the excretion through the kidney is lessened, presumably owing to a greater destruction of the substance in the body, at any rate, it does not go preponderatingly into the feces. It is not unlikely that the constipating action of morphin leads to reabsorption of such portions as may have been excreted into the bowel; so that, in the long run, they are destroyed in good measure rather than discharged.

Such considerations harmonize with Takayanagi's³ further finding that less morphin can be recovered from habituated than from nonhabituated animals. But increased destruction will not account for the lack of toxic symptoms in the habitues. The latter often fail to react unfavorably, even when their bodies still contain more morphin than an unaccustomed individual could possibly tolerate. We cannot easily escape the conclusion, therefore, that in some way an immunity of some sort has been developed. That the habituated organism responds differently from the normal, in respect to certain metabolic changes, has been demonstrated in man by Schoen,⁴ in the medical clinic at Würzburg. Morphin is known to depress the basal metabolism, the decrement amounting to 25 per cent in some cases, soon after an injection. After repeated doses, this depression of metabolism no longer takes place. The acidosis that characterizes the effect of an initial dose of morphin also is missed in the case of persons that have become partially accustomed to the alkaloid. How these failures to respond in the usual way come about in the tolerant subject has not been ascertained.

ADEQUATE VERSUS OPTIMAL NUTRITION

Less than two decades have elapsed since Hopkins first announced that mixtures of proteins, fats, carbohydrates and salts, however well selected and proportioned, are not adequate for the support of normal nutrition, and it is only about a dozen years since this observation was put on a firm basis by the nearly simultaneous publications of experimental evidence by Hopkins, Osborne and Mendel, and McCollum and Davis. Few scientific discoveries have met such prompt and widespread recognition and application. Students of the chemistry of food and nutrition were quick to recognize the importance of the fact that normal nutrition requires substances which were previously unknown and which are irregularly distributed among even natural food materials, and to institute reexamination of supposedly familiar foods to determine which

³ Takayanagi, T. Ueber das Schicksal des Morphins im Tierkörper II, Ueber die Zerstörung des Morphins im Körper gewohnter und ungewohnter Ratten, Arch f exper Path u Pharmacol 102 183 (May) 1924.

⁴ Schoen, R. Zur Kenntnis der Morphinwirkung beim Menschen II Die Veränderung des Grundumsatzes und der Einfluss massiger Gewöhnung auf Grundumsatz, Blutreaktion und Atmung Arch f exper Path u Pharmacol 102 205 (May) 1924.

¹ Hatcher, R. A., and Wilbert, M. I. Pharmacology of Useful Drugs. Chicago: American Medical Association, p. 62.

² Takayanagi, T. Ueber das Schicksal des Morphins im Tierkörper I Ueber die Ausscheidung des Morphins beim Warmblüter Arch f exper Path u Pharmacol 102 176 (May) 1924.

are and which are not, either singly or in combination, adequate for the nourishment of laboratory animals, especially of the omnivorous rat, and presumably therefore of man.

Thus, it has become well known that the great group of food materials composed of cereal and other grains and their mill products, while constituting the largest and most economical source of food energy and supplying also important amounts of protein of fair nutritive efficiency, are not nutritionally adequate alone, because of an insufficient content of calcium and of fat-soluble vitamins. In most studies of the "dietary deficiencies" of familiar articles or combinations of food, as well as of so-called synthetic dietaries consisting of mixtures of purified nutrients, there has been a tendency to accept the attainment of adequate nutrition as a stopping point in this line of experimental inquiry, as if, having what is nutritionally adequate, there were nothing more to be sought. The insufficiency of this view can now be recognized clearly from the vantage point of present knowledge without in any sense minimizing the importance of the pioneer work of the last twelve years through which our newer knowledge of nutrition has been gained. In fact, several of the workers in this field have themselves emphasized from time to time the fact that standards of adequacy in nutrition are subject to revision and have tended to become more rigorous as feeding experiments of longer duration have come to be employed in nutrition investigations. Osborne and Mendel, for instance, quite early in their series of publications on feeding experiments with purified food-stuffs, called attention to cases in which, with yeast as a sole source of water-soluble vitamin in the nutrition of rats, adequate growth to full adult size was secured but normal reproduction did not follow, and McCollum has pointed out that diets near the minimal requirement may induce adequate nutrition, as gaged by successful reproduction, but may fail to prevent the early onset of signs of senility.

Further evidence that a well planned dietary may be the direct cause of superior, as distinguished from merely adequate, nutrition appears in a paper just published from the laboratory of food chemistry of Columbia University.¹ In this investigation, starting with well standardized laboratory animals (rats) on a diet which was shown to be adequate in that it supported growth, reproduction and successful suckling of the young for generation after generation, it was found that an increase in the proportion of milk in this already adequate diet resulted in a number of evidences of improved nutrition. Growth was more rapid, particularly as measured by the gain in weight during the period following weaning. Growth was more efficient during the same period, as shown by greater gain in weight per thousand calories of food consumed. The

average size at all ages was somewhat greater. There was earlier maturity, as shown by the age of the female at the birth of her first young. Reproductive life was of longer duration, old age being deferred in the same individuals in which earlier maturity had been induced. There was greater success in the rearing of young, as shown by an increase both in the numbers and in the percentage of young reared, and by a decrease in the percentage of females failing to bear and rear young. There was better growth of the young during the suckling period, as shown by a larger average weight at the uniform weaning age adopted.

Each of these findings is supported by numerous and carefully controlled experiments. Sherman and Campbell conclude that the better of the two diets tested in these experiments is probably susceptible of still further improvement, and that evidently there is not only a line to be drawn but also a wide zone to be explored between adequate and optimal nutrition.

AEROPLANES IN MEDICAL SERVICE

Amid the rapid changes that spell the progress of our day, we tend to lose enthusiasm for the novelties that are invading modern life in astonishingly quick succession. Civilized man has become blasé. He has come to expect new discoveries and novel inventions at every turn, and, surfeited by their actual production, he reacts with surprise or gratitude only when some exceptional contribution is made. He is prone to forget the dramatic chapters of medicine that have included the evolution of anesthesia and antiseptics with the consequent development of transfusion and reconstructive surgery, almost within the memory of the living. And the routine care of the sick is today taken for granted, it has become a part of everyday experience that scarcely ever calls for special commendation.

Contrast often serves to awaken us to a more adequate realization of the transformations that have come into the life of our generation. It has been estimated¹ that at one period of the battle of Waterloo, 10,000 men were absent, having gone to the rear with British wounded. No regularly trained men were provided for the removal of these unfortunates, or to assist the surgeons either on the field or in the hospitals. Wounded were removed by the bandsmen or by their comrades to the first line of surgical assistance, and afterward transferred to field hospitals or general hospitals, in return carts of the commissariat, in hired country carts or in spring wagons. The attendants in the hospitals were not trained men, but were detailed from the regiments as occasion rose.

What a change is represented by the introduction of new devices, such as the aerial ambulance transport. The aeroplane has been employed for carrying the sick.

¹ Sherman, H. C. and Campbell, H. L. Growth and Reproduction upon Simplified Food Supply. IV. Improvement in Nutrition Resulting from an Increased Proportion of Milk in the Diet. *J. Biol. Chem.* 60: 5 (May) 1924.

¹ Howell, H. A. L. The British Arrangements During the Waterloo Campaign. *Proc. Roy. Soc. Med. (Sec. History of Med.)* 17: 39 (May) 1924.

and wounded in war since 1915, the French being foremost in the development of its possibilities. Already one may read of the possible starting of an aerial ambulance convoy, with an establishment of machines and personnel, on the lines of the motor ambulance convoys of present day armies. Special types of aircraft—ambulance machines—have already been constructed. Air Commodore Munro of the British Air Forces feels certain that they will find extended use in future warfare, particularly in a war of movement, whereby serious casualties can be removed rapidly far from the field. It might become possible to place communication medical units farther back, and to have direct communication between them and the base hospitals. Munro pictures aeroplanes carrying up troops or stores, and used on the return journey to evacuate the sick. On the naval side, seaplanes may convey the sick from men-of-war to land.

This is not merely a story from the realms of romance, it will doubtless soon represent an actuality.² What may we expect, then, from the aeroplane ambulance in the service of man during peace?

THE SUPRARENALS IN HYPOGLYCEMIA

Many of the functions of the body have been found, on critical analysis, to represent the outcome of an interplay of antagonistic or of mutually compensating actions, resulting in what is commonly termed a condition of equilibrium. When acid factors develop in undue degree there are arrangements, including the supply of neutralizing bases, for combating them. Oxidations and reductions interchange in the metabolism. Depletion of some essential, such as oxygen, leads automatically to activities that tend to restore the supply and prevent prolonged shortage. The upshot of all such correlations is expressed in a sort of physiologic "normalcy," exemplified most perfectly in the almost unvarying composition of the blood, despite the drafts and deposits to which it is continually subjected.

So prompt and perfect are many of these adjustments that their mechanism may not readily be discerned, unless a severe upset of the physiologic functions occurs. That is what happens, apparently, in severe diabetes. Under ordinary conditions, the mobilization and the destruction of sugar proceed in such perfect accord that, aside from transitory variations of lesser degree, the concentration of glucose in the circulating blood remains unvaried from day to day. When the factors facilitating tissue utilization of sugar, notably the pancreatic hormone represented by insulin, fail, the liberation of carbohydrate may continue uncompensated. Hyperglycemia and consequent glycosuria become conspicuous. Insulin combats this. When, however, too much is available, the sugar disappears to such a

degree that another extreme is brought about, namely, hypoglycemia.

It is a remarkable fact, just becoming realized, that the symptoms of overdosage with insulin—which means depletion of immediately available carbohydrate, since it can be promptly relieved by sugar—are characteristic of special activity of the sympathetic nervous system. The hypoglycemic reactions occurring when an excessive dose of insulin is given include pallor, rapid pulse, dilatation of the pupils and profuse sweating, which are indications of discharge of sympathetic impulses. Cannon and his collaborators, at the Medical School of Harvard University, have demonstrated that in animals with a denervated heart, acceleration of the beat is indicative of suprarenal secretion. They³ now find that, as the glycemic concentration falls after injection of insulin, it reaches a critical point at which the rate of the denervated heart begins to be accelerated, and, as the sugar percentage continues to fall, the heart rate continues to rise until a maximum is reached. Discharge of epinephrin into the circulation is, however, followed by mobilization of sugar from its reserves, consequently, if not too much insulin has been given, the increased rate of the denervated heart may be followed by an increase of the glycemic percentage and an attendant fall in heart rate.

Cannon has pointed out that the mechanism protecting the body from dangerous hypoglycemia probably operates in two stages—a primary stage, in which sympathetic activity with suprarenal secretion occurs and mobilizes sugar from the liver, and, if this proves to be inadequate, a secondary stage, in which the activities of the first stage are intensified and augmented in convulsive seizures. The significance of the symptoms of sympathetic manifestations in overdosage with insulin thus becomes apparent. The mechanism, as Cannon expresses it, acts like many others, already known, that assure stability of the organism. When the equilibrium, which normally indicates a concentration of sugar in the blood sufficient to supply needy tissues, is disturbed by serious lessening of the concentration, this compensatory mechanism is set in action to restore the equilibrium. Sugar is set free from the reserves. If the largest reserve station, the liver with its glycogen, fails, or if the agency reducing the sugar content of the blood is too potent, as when excessive doses of insulin are given, the mechanism is overwhelmed and the result is disastrous to the organism—convulsions and coma are followed by death. From such consequences of an inadequate sugar supply to the tissues, the organism is protected by the combined activity of the sympathetic system and suprarenal secretion. The experiments of the Harvard physiologists have thus furnished another example of remarkable automatic adjustment in the body.

² Munro, D. The Use of the Aeroplane in the Medical Services in War. *Proc. Roy. Soc. Med. (War Section)* 17: 7 (Feb.) 1924.
³ Evacuation of Sick and Wounded by Aeroplane. *Belgium Letter*, this issue, p. 778.

¹ Cannon, W. B., McIver, M. A. and Bliss, S. W. Studies on the Conditions of Activity in Endocrine Glands, VIII. A Sympathetic and Adrenal Mechanism for Mobilizing Sugar in Hypoglycemia, *Am. J. Physiol.* 69: 46 (June) 1924.

Current Comment

THE LOCOMOTION OF THE LYMPHOCYTES

Ever since their functions were first more clearly ascertained, a peculiar glamour has become attached to certain types of leukocytes. The phagocytic cells of the blood have been described with little short of poetic fancy, now in their role as scavengers of the body, now playing the part of an army of defense against some bacterial invader. Movement including locomotion, has been pointed out as a striking characteristic, exhibiting itself as the polymorphonuclear leukocytes migrate through the vessel walls in answer to some stimulus, chemotactic or what-not, in nature. No story of immunity is complete without reference to the bodily defenses that Metchnikoff so vigorously portrayed. No blood count of today fails to put these mobile leukocytes into a special group according to which the variations in their relative numbers bear witness to the seriousness of their special tasks. Perhaps, however, they may presently be shorn of some of the exclusive glory under which they have been parading, for we have recently been reminded that so far as the capacity to move is concerned, the human lymphocytes are not lacking merit. Occasional power of locomotion has been conceded to them, but McCutcheon¹ has now demonstrated that the prevailing opinion that lymphocytes are capable of only extremely slow motion is erroneous. He therefore regards it as likely that these cells are able to move actively through the tissues. Such a conclusion, McCutcheon adds, lends support to the view that lymphocytes reach inflammatory areas through actual active migration, though it does not disprove the possibilities of their being also passively carried by lymph currents or being formed by proliferation of cells already in the tissues. Are we approaching a contest for laurels among the blood cells?

EVIDENCE THAT INSULIN DOES NOT PROMOTE FERMENTATION

It has been characteristic of the development of our knowledge of various hormones that information regarding what they can accomplish has often long preceded a rational understanding of how they really act in the organism. This is conspicuously true, for example, of epinephrin, thyroxin and insulin. The last of these, the pancreatic hormone, being the latest to engage the attention of scientists, is at present still the subject of lively discussion from many directions. Broadly speaking, insulin facilitates the utilization of sugar in the metabolism; it renders glucose physiologically available in persons that lack the capacity in greater or lesser degree to benefit by processes in which the carbohydrate normally plays a significant part. To express the function of insulin in this way is, however, far from "explaining" the details of its biochemical performance. Does it liberate something that directly facilitates carbohydrate breakdown? Does it merely promote the normal cellular oxidative changes as a

stimulating drug might? Or does it somehow render the sugar molecule more susceptible to chemical disintegration? The last hypothesis has been particularly popular. Many students of the metabolism of the carbohydrates have assumed an analogy between the behavior of sugar in fermentation and its physiologic transformations in the living body. This lends interest to a recent study¹ of the influence of insulin on the rate of fermentation of glucose by yeast. The demonstrated failure to alter the rate of destruction of the sugar in this way may be regarded as evidence in favor of the view that the action of insulin is not on the glucose molecule itself. At any rate, one would expect that if the sugar was altered by contact with the hormone some change in the rate of fermentation would manifest itself. The burden of proof that insulin in some way alters the configuration or structure of the glucose molecule is gradually being shifted to the shoulders of those who have believed in this explanation of a remarkable biochemical property.

HEAT PRODUCTION THROUGH SUPRARENAL SECRETION

Although metabolism is by no means to be identified solely with oxidation, there can be no doubt that oxidative processes are responsible for heat production in the body. Without knowledge of the mechanisms of heat loss from the organism, which are becoming fairly well understood, no satisfactory theory of temperature regulation in the body can be evolved. It is equally important, however, to become thoroughly familiar with the principles of thermogenesis that apply, and it is in connection with these that current uncertainty and ignorance must still be admitted. The need of heat arises from exposure to cold. The latter may be combated by a conservation of heat that might ordinarily be eliminated as "waste" from the organism. Only minor emergencies of lowered temperature can be met in this manner. When the conservation process no longer suffices, the body may shiver, that is, muscular activity, with its by-product of heat, is initiated. A further possibility of heat production lies in direct chemical augmentation of metabolism. Cannon and Querido² believe that the latter occurs in response to suprarenal secretion. Several investigators have confirmed the augmenting influence of epinephrin on metabolism, and it is known that increased secretion of the suprarenals accelerates the oxidative processes. The Harvard physiologists have supplemented the story by a demonstration that cold actually increases the output of epinephrin from the suprarenal medulla. By administering known volumes of water at a definite (cold) temperature they have established what they fancifully term a "heat liability" of known amount in the body, for the cool liquid abstracts from the tissues heat that must be restored. Only when larger "heat liabilities" are produced does shivering occur. When the function of the suprarenals is excluded, in animals

1. McCutcheon, M. The Rate of Locomotion of Human Lymphocytes in Vitro. *Am. J. Physiol.* 69: 279 (July) 1924.

1. Travell, J. G. and Behre, J. A. The Effect of Insulin upon the Rate of Fermentation of Glucose by Yeast. *Proc. Soc. Exper. Biol. & Med.* 21: 478 (May) 1924.

2. Cannon, W. B. and Querido, A. The Role of Adrenal Secretion in the Chemical Control of Body Temperature. *Proc. Nat. Acad. Sc.* 10: 245 (June) 1924.

this chemical augmentation of metabolism no longer succeeds, thus bearing witness to the specific part played by the secretion of the glands. Furthermore, from the investigations of Cannon and Pereira,³ it now appears that heat production in fever may represent the outcome of increased suprarenal secretion, a fact corresponding with the reduction of the epinephrin content of the medulla in infections.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Tuberculosis Clinic—The Arkansas Tuberculosis Association, at the invitation of the Garland County Medical Society, recently conducted the first field clinic in the state for the discovery of early cases of tuberculosis.

FLORIDA

Health Department Moves—The department of health of Palm Beach will soon move to the State Board of Health Building, on Third Avenue, which building has been authorized to be opened after being unoccupied since its erection three years ago.

GEORGIA

Physician Held—Dr. H. E. Pontius, Atlanta, was arrested, August 18, on a charge of violating the Harrison Narcotic Law; it is reported Dr. Pontius waived hearing before the U. S. commissioner and was released under bond. Pontius was sentenced for a similar offense to eighteen months in the federal penitentiary in 1922.

Medical Society Reorganized—The Fourth Congressional District Medical Society, which had not held meetings in several years, was formally reorganized at Warm Springs recently, and the following officers elected: president, Dr. Mercer Blanchard, Columbus; vice president, Dr. Wallace H. Clark, LaGrange; secretary-treasurer, Dr. Francis B. Blackmar, Columbus. The fourth district comprises the counties of Carroll, Chattahoochee, Coweta, Harris, Herd, Marion, Meriweather, Muscogee and Talbot.

ILLINOIS

Personal—Dr. Joseph W. Edwards, Mendota, recently celebrated his ninety-second birthday.—Dr. and Mrs. Charles F. Bradway, Abingdon, celebrated their golden wedding anniversary, August 16.

Hospital News—Ground was recently broken for a \$500,000 hospital building for the St. James Hospital, Chicago Heights.—The King's Daughters, Evanston, recently opened a home for convalescent heart patients, admitting girls and women selected from a limited group. Until the community develops, all applications are to be sent through the office of the Chicago Association for the Prevention and Relief of Heart Disease.

Chicago

Personal—Dr. Ralph B. Cobb has been appointed superintendent of the Iroquois Memorial Hospital, Chicago.—Dr. Norman Bridge, formerly of Chicago, has subscribed \$150,000 to the Southwest Museum of Art, Los Angeles.

Rush Cornerstone Removed—The cornerstone of Rush Medical College, laid Nov. 20, 1875, was moved, August 28, in the wrecking operations now under way. The Grand Master of the Masonic Lodge of Illinois removed the box from the stone containing records that had lain there forty-nine years. There were copies of the *Chicago Medical Journal* of the year 1867, copies of Chicago newspapers, a city directory, tourists' guide for the year 1875, the Rush Medical College charter, pictures of the faculty and the valedictorian address of 1871. A number of prominent Chicago physicians were present at the ceremony.

KENTUCKY

Personal—Dr. William W. Zwick, Georgetown, has been appointed university physician to the state university, Lexington.

Chiropractor Charged with Murder—Mack MacGregor, who claims to be a chiropractor, was arrested, August 19, in Bowling Green on advice from the sheriff at Guntersville, Ala., charged with murder in the second degree; it is reported MacGregor was tried about a month ago at Bowling Green on a charge of practicing chiropractic without a license.

Trachoma in Johnson County—The county health department, cooperating with the Bureau of Trachoma of the State Board of Health, has completed a three weeks' investigation of trachoma in Johnson County. A total of 1,586 school children were examined, of whom 770 had physical defects of some kind. About 150 cases of trachoma were treated medically and twenty-nine cases surgically.

Appointments at University School of Medicine—The following additions to the faculty of the University of Louisville School of Medicine have been announced: H. O. Calvery, formerly instructor, University of Illinois, to be assistant professor of chemistry; W. H. Dawson, formerly demonstrator in pathology, McGill University Faculty of Medicine, to be instructor in pathology and bacteriology; Dr. Charles J. Armstrong, formerly professor of chemistry and physics, Meridian College, and assistant resident surgeon, Barnes Hospital, St. Louis, to be resident in surgery; David C. Elliott, formerly research assistant in anesthesia, department of pharmacology, University of Cincinnati College of Medicine, to be resident anesthetist. The following administrative changes have been made: Dr. Herbert Hart Hagan, instructor in surgery, formerly assistant resident surgeon at Barnes Hospital, St. Louis, to be executive of the surgical division, Louisville City Hospital; J. W. Hancock, assistant in surgery, to be executive in the surgical dispensary, Louisville City Hospital; Dr. Oscar O. Miller, director of the Tuberculosis Clinic and superintendent of the Waverly Hills Sanatorium, to be assistant clinical professor of medicine; Dr. William Curry Martin, D. P. H., Johns Hopkins, to be lecturer in public health and hygiene and assistant in medicine; Dr. Alice N. Pickett, instructor in obstetrics. The following additions have been made to the clinical faculty: Dr. Herman Mahaffey, clinical assistant in medicine; Dr. Hugh H. Richeson, clinical assistant in ophthalmology; Dr. George E. Vaughan, clinical assistant in otology, rhinology and laryngology; Dr. Clyde McNeill, clinical assistant in medicine; Dr. Lyle Atherton, clinical assistant in gynecology.

LOUISIANA

Hospital News—The new \$260,000 North Louisiana Sanatorium building, Shreveport, owned by Dr. Arthur A. Herold, Shreveport, and Louis I. Abramson, was recently opened.—By the will of Mrs. Alexina McBurney, the Charity Hospital of Louisiana, New Orleans, was made the beneficiary to the extent of about \$400,000 and the Presbyterian Hospital to the extent of about \$250,000. The bequest to the Charity Hospital was for the purpose of endowing an annex for tuberculous patients, and the endowment will be known as the Alexina Sinclair McBurney Fund. The bequest to the Presbyterian Hospital makes possible the establishment of a free clinic, and this fund will be known as the Alexina Sinclair Fund. J. C. Barr, Edward F. Bacon and John Division are named executors. The Charity Hospital has decided to extend to Claiborne Avenue, taking in the entire block front between Tulane Avenue and Gravier Street, which plans will necessitate acquiring for expansion purposes sixteen property holdings.

Meeting to Establish Health Unit—A representative of the U. S. Public Health Service, in cooperation with the Louisiana State Board of Health, held a meeting at Rayville, recently, to explain the purpose of a public health unit. It was stated that with \$3,750 appropriated by Richland Parish, a like sum would be contributed by the U. S. Public Health Service and the state board of health. With this fund (\$7,500) a full-time physician could be appointed by the state board of health who would examine the public school children to ascertain their physical defects and to recommend to parents such corrections as might be beneficial. A trained nurse could be provided to work among the school children and visit the homes. A dentist could also be provided for short periods to look after the teeth of school children under 12 years of age. A resolution was passed at this meeting recommending that the expense of a health unit be borne by all the people.

³ Cannon, W. B. and Pereira, J. R. Increase of Adrenal Secretion in Fever. *Proc. Nat. Acad. Sc.* 10: 247 (June) 1924.

of the parish and that the police jury should be asked to contribute \$1500 the school board \$1500 the town of Ry-ville \$1,500, Birmingham \$175 and Delhi \$175, and that a general public meeting be called in each of the towns mentioned without delay to present this matter to the people

MAINE

Medical Association and Crippled Children—At the recent annual meeting, the house of delegates of the Maine Medical Association approved the request of the Maine Public Health Association that the former direct the examination of crippled children

Donation for a Marine Hospital—A grateful patient or friend of the marine hospital service, in 1878 donated \$523.50 for the benefit of the Marine Hospital of Bath, Me. The money was then placed at interest by the collector of customs and is still on deposit, because there was not then and never has been a marine hospital at Bath. The nearest ones on that coast are located at Portland and Boston

MARYLAND

Illegal Practitioner Arrested—Jacques A. Gordon was arrested at Atlantic City, August 29, charged with practicing medicine without a license, it is reported. Gordon who wrote prescriptions for guests at a prominent hotel where he was stopping was employed for some time in an emergency hospital tent on the beach

Personal—Dr. Walter C. Craig, assistant director at the Johns Hopkins Hospital, Baltimore has resigned to accept a position in the department of surgery at Yale University School of Medicine New Haven Conn. Dr. Craig will be succeeded by Dr. John H. Snoke who until recently was superintendent of St. Luke's Hospital, Shanghai, China

Women Oppose Maternity Act—The American Federation of Democratic Women and the Women's Constitutional League of Maryland have both asked the state legislature to refuse to cooperate with the Federal Maternity Act. The latter organization said in part: "We think that this bureau has disregarded the established methods which have built up public health work in the counties, methods that have gained the support and appealed to the pride and interest of the people giving them in addition to general health work, help and instruction in maternal and child hygiene which can never be divorced successfully from general health problems. Instead of building on this foundation, however, a separate bureau has been established and separate nurses have been employed, these nurses receiving higher salaries than those paid to other public health nurses thus tending to break down the morale of those who have been giving faithful service for smaller compensation"

MASSACHUSETTS

Changes in Pediatric Service—Drs. James Herbert Young and Joseph Garland have been appointed visiting physicians and Dr. Eli C. Romberg visiting physician to outpatients on the pediatric service at the Massachusetts General Hospital

University News—The following changes at the Medical School of Harvard University, Boston, have been reported. Dr. Derric C. Parmenter will succeed Dr. Wade Wright, who has resigned to take up work with the Metropolitan Life Insurance Company New York, Dr. Carl Rupp Doering has been appointed instructor in vital statistics, Dr. Edward Godfrey Huber, assistant in vital statistics, and Dr. Charles Alexander Mackay, instructor in ventilation and illumination

State Board Hearing Forbidden—Following the revocation of the license of Dr. Percy A. Shurtleff, West Springfield (THE JOURNAL, August 16 p. 539) by the Board of Registration in Medicine, Dr. George H. Davis, alleged to have been a successor of Dr. Shurtleff, was summoned for a hearing before the board, August 14. A court, however, issued a restraining order forbidding the board to hold the hearing in the case of Dr. Davis until the supreme court has acted on the appeal of Dr. Shurtleff. Dr. Davis, it is reported, intends to test the constitutionality of the law under which the board is acting

MICHIGAN

Society News—Dr. Frank P. Bohn, Newberry, has been elected president of the Upper Peninsula Medical Society. Dr. Bohn is a member of the Michigan senate. Dr. Arthur S. Kitchen Escanaba, was elected vice president, and Escanaba was selected as the next meeting place

Births in Michigan—The greatest number of births in 1923 in Michigan according to the state health department, occurred in August, the lowest number in November. There were 47,741 boys and 45,215 girls born during the year among whom only 1,834 were colored children, of which fourteen were Chinese seven Indian, and 1814 negroes. There were 1,210 illegitimate births, and 1937 children born in plural births, including five sets of triplets

State Medical Society—The Michigan State Medical Society will hold its annual meeting under the presidency of Dr. Guy L. Connor, Detroit at Mount Clemens, September 9-11. The six scientific sections will join in a combined sectional clinical meeting to be conducted by Dr. Emanuel Libman, New York on the last day of the meeting. Twelve out-of-state speakers are on the program. Dr. William D. Haggard, Nashville Tenn., president elect of the American Medical Association will address one of the general meetings on "The Relationship of the Physician to the Public"

MINNESOTA

Conference on Contagious Disease—A conference of state, city and county health officers superintendents of hospitals, orphanages and similar institutions, called by the state board of health was held at the Capitol Building, Minneapolis August 19, to adopt regulations for public and private institutions, particularly hospitals that will help prevent communicable disease in Minnesota. Dr. Charles Scofield Benson, president of the state board of health, who presided, was instructed to appoint a committee to make an extensive study of the problems. The committee's report will be submitted to the state board of health and the state board of control. The following physicians are on the committee: Drs. Jesse L. McElroy, St. Paul, Louis B. Baldwin, Minneapolis, William Mills, Charles Bolsta, Ortonville, Francis E. Harrington, Minneapolis, Oscar E. Locken, Crookston, Owen W. Parker, Ely, Walter H. Valentine, Tracy, and James H. Haines, Stillwater

Resolution on Smallpox Vaccination—In connection with the smallpox situation in this state (THE JOURNAL August 16 p. 539), the Olmsted County Medical Society adopted the following resolution, which was introduced by Dr. Charles H. Mayo, Rochester:

WHEREAS, Vaccination against smallpox and typhoid fever has been attacked by various pseudoscientific societies and in some instances by the public press as being ineffective in the prevention of these diseases and dangerous to the health of those vaccinated; and

WHEREAS, The experience of the medical department of the U. S. Army has proved conclusively that in the case of typhoid fever vaccination is a safe and dependable measure responsible for the saving of thousands of lives during the World War as is shown by a comparison of the typhoid rate during the Civil War before antityphoid vaccination was known and the rate during the World War indicating that had the former rate prevailed over 60,000 Americans would have died of the disease instead of the actual number which was barely 200; and

WHEREAS, General neglect of vaccination against smallpox is leading to a greatly increased prevalence and in some places to its appearances in epidemic and in virulent form; and

WHEREAS, There is positive proof as shown by the records of state and municipal health departments that vaccination with revaccination will prevent smallpox; and

WHEREAS, Vaccination properly performed and cared for carries no appreciable risk to the health of those vaccinated as proved by the extensive experience of army surgeons who have treated hundreds of thousands of persons without a death therefore be it

Resolved That the members of the Olmsted County Medical Society hereby publicly endorse vaccination as a most effective means for the protection of individuals and community health and further that they go on record to the effect that the vaccination is a harmless procedure and conducive to public welfare

MISSOURI

Chiropractor Arrested—Edwin F. Schwenker a chiropractor St. Louis, was arrested, August 13, charged with practicing medicine without a license. The evidence in this case was obtained by the health department

Illegal Practitioner Escapes—Ernest Behagen, St. Louis who was serving a two year sentence in the workhouse for practicing medicine without a license, escaped from that institution, August 6, and has not been captured

Evacuation Hospital Appointments—The following physicians have been appointed on the staff of evacuation hospital No. 67 (Missouri Baptist Sanitarium Unit St. Louis) organized reserves commanding officer, Lieut.-Col. William H. Luedde, executive officer, Major Edward Lee Dorsett, chief of surgical service, Lieut.-Col. Willard Bartlett, chief of medical service, Lieut.-Col. Oliver H. Campbell

Diploma Mill Graduates in India—There are so many, so-called doctors in India who style themselves graduates of the Kansas City College of Medicine and Surgery, says the

Indian Medical Record, that "we publish here the report of an investigation by the Connecticut special grand jury about this college. It will show that these diplomas are sold for money and that the college is a fraudulent affair."

Proprietor of "Health Baths" Arrested—Ferdinand C. A. Meyer, Overland, was recently arrested, charged with practicing medicine without a license, it is reported. The arrest was made on complaint of parents who claimed that Meyer mistreated their daughter. Meyer's "sanitarium" consisted of a one-room house of a primitive type. On Meyer's business card was the following: Scientific massage, corrective feeding, Gospel naturopath since 1915, proprietor of the rural health baths.

Circuit Court Upholds State Board—Judge Willard P. Hall, of the Independence Division of the Circuit Court, in a recent decision supported the action of the state board of health in refusing to accept for examination for license to practice medicine graduates of the Kansas City College of Physicians and Surgeons, whose dean, Dr. Abraham L. McKenzie, had brought suit against the board on a writ of certiorari, claiming that the state board of health had been unfair in its attitude toward the school. Judge Hall pointed out in his decision that Dr. McKenzie admitted on the stand that the financial condition of the school did not permit the employment of "high priced medical experts" as instructors. The judge also drew attention to the fact that, according to the testimony, the equipment of the school was inadequate. Testimony concerning the necessary equipment of a medical school was given by members of the Jackson County Medical Society.

NEBRASKA

Hospital News—The new Good Samaritan Hospital at Kearney, erected at a cost of \$250,000, was officially opened, July 23.

Physician Arrested—Dr. George R. Gilbert, Omaha, was recently arrested on a charge of selling narcotics to a drug addict, it is reported. The transaction occurred in Council Bluffs, and Dr. Gilbert was returned to that city and placed in the county jail.

NEW JERSEY

Smallpox in Camden—It is reported that of three deaths from smallpox which occurred in Camden in one week in the present epidemic, none of the victims had ever been vaccinated.

NEW YORK

Hospital News—Plans are being drawn for an addition to the Albany Hospital, Albany, which will cost \$750,000.

Free Mental Clinics—The superintendent of the State Hospital, Binghamton, Dr. William C. Garvin, has announced that free mental clinics will be established by that institution in Boone, Chenango, Cortland, Chemung, Delaware, Otsego, Schoharie, Madison and Tompkins counties.

County Laboratories—The development of laboratory facilities in Montgomery County has been rapid during the last year, according to the state department of health. State aid has made it possible to increase the staff. Two branch laboratories in the county are being established, one at St. Mary's Hospital and one at the Montgomery Sanatorium. The work of the central county laboratory has been increased and plans are being made to have all types of routine diagnostic examinations performed there.

Damage Suits Follow Typhoid Epidemic—The city of Albany has been made defendant in three damage suits following the typhoid epidemic of last May. Mrs. Esther Murdick, it is reported, asks \$25,000 for the death of her mother, John Weisner asks \$25,000, and an additional \$2,500 for expenses, for the impaired health of one son and the illness of two other children. Harris Braun asks \$10,000 for his illness, alleging that the city authorities knew the water was contaminated but failed to notify residents.

Heart Association Changes Name—The name of the New York Association for the Prevention and Relief of Heart Disease has been changed to The New York Heart Association. This association was formed in 1915 and in the last five years has grown from a membership of 125 to 268, and from an income of more than \$4,000 to an income of more than \$17,000. There are 140 cardiac clinics in the United States, of which forty-eight are in New York. Four other cities, Boston, Philadelphia, Indianapolis and Chicago, have started heart associations since this association was formed,

and six more groups are planning similar societies. Children with heart disease were placed in fresh air homes for the first time in 1922. Places were promised for 625 children this summer. Trade classes for girls with heart disease, as an annex to the Manhattan Trade School, were started in 1923. Eighty-two girls passed through these classes during the year. Early this year, classes for boys, who were refused permits to work, were added. The Associated Cardiac Clinics came into the association this year as a committee of the association.

New York City

Physician Held to Grand Jury—Dr. Harry M. Serota, New York, has been held to the federal grand jury on waiving examination on a charge of violating the Harrison Narcotic Law, it is reported.

Physician Held—Dr. Hugo J. Loebinger and three ex-convicts were arrested, August 23, charged with attempting to swindle a wealthy Manhattan furrier out of \$7,000, it is reported. Loebinger, who is 61 years of age, a graduate of the University of Erlangen, Germany, and has an office at 320 West Eighty-First Street, Manhattan, is alleged to have been the go-between for the ex-convicts and the furrier.

Personal—Dr. William Irving Sirovich is the democratic nominee for Congress of the fourteenth congressional district, which includes the major part of the East Side of New York. Dr. Smith Elv. Jelliffe has returned from a meeting of neurologists and alienists of French-speaking countries, held in Brussels the first week in August. Dr. Jelliffe was an official delegate from the American Neurological Association and the American Psychiatric Society.

Maternity Work in a Colored Community—A report covering six years' work among colored mothers and children in the Columbus Hill district, New York, has recently been issued by the New York Association for Improving the Condition of the Poor. During this period this association supervised 1,224 pregnancies, an average of 204 a year. Ninety-four per cent of these patients were delivered either in hospital wards or by hospital physicians at home. Six hundred and fifty-six patients were given prenatal care for a period of three months or more, 241 for two months and less than three, 313 for one month and less than two. The report states that there can be no question that the group receiving the greatest amount of prenatal care showed the best results for in this group 93.2 per cent of the children were reported as live babies at the end of the first month, whereas in the group receiving the lesser amount of prenatal care only 83.1 per cent were so reported. It should be pointed out, however, that the latter includes the greater portion of the mothers whose pregnancy had been prematurely terminated. Of these 1,224 pregnancies, 23.3 per cent apparently were complicated by syphilis.

NORTH CAROLINA

Physician Arrested—Dr. T. F. Jones, Raleigh, was recently arrested and in default of bond placed in jail, for violation of the Harrison Narcotic Law, it is reported. Dr. Jones was indicted under a similar charge last year.

Physician Bound to Grand Jury—Dr. Ptolmey P. Chambers, Asheville, who, it is reported, was recently arrested charged with violation of the Harrison Narcotic Law (The Journal, August 23, p. 620) was bound over to the federal grand jury under bond of \$1,000 at a preliminary hearing, August 16.

Unvaccinated School Children—Having announced that vaccination would be required, the Buncombe County health authorities, August 1, denied admission to the public schools of the county to more than 2,500 unvaccinated children. It is expected that temporary permits will be issued to most of these children and that in a short time they will have been vaccinated against smallpox.

Personal—At the semiannual meeting of the Third District Medical Society, comprising the counties of Columbus, New Hanover, Onslow, Pender, Brunswick, Bladen and Sampson, Dr. Albert Anderson, Raleigh, president of the state association, gave an address on 'Mental Hygiene.' Dr. Charles O. Delaney has been appointed on the staff of the Lawrence Hospital, Winston-Salem. Drs. Henry C. Salmons and Robert R. Garvey of Elkin will open a hospital of twelve beds at Elkin about September 1.

Report of Orthopedic Hospital—The annual report of the State Orthopedic Hospital, Gastonia, recently issued, shows that, since the hospital opened, in July, 1921, 1,572 crippled

children from eighty-eight of the 100 counties in the state have been treated there. The superintendent, Dr. Oscar L. Miller, has conducted clinics throughout the state to bring to the attention of the public the opportunities afforded for the treatment of deformities. The hospital needs now a ward for colored children, and an appropriation for that purpose will be asked at the next legislature.

NORTH DAKOTA

Physician Arrested—Dr. William R. Shortridge, Flasher, who has been under \$6,000 bonds awaiting trial for an alleged criminal operation, was arrested, August 16, at Fort Yates on statutory charges and held without bail pending further investigation of another criminal operation, it is reported.

OHIO

Smallpox in Toledo—Three deaths in Toledo, August 18, made a total of thirty-four due to smallpox in the city and county since May 1. There were still nineteen cases of smallpox in the Contagious Disease Hospital, of which sixteen were of the hemorrhagic type.

New President at Western Reserve University—The trustees and faculties of Western Reserve University, Cleveland, announce the inauguration of Robert Ernest Vinson LL.D., president of the university, October 9 on which date the dedication of the new buildings of the school of medicine will also take place.

Illegal Practitioner Arrested—William Wilson, Cleveland, was arrested, August 22 on complaint of a "patient," for practicing medicine without a license, it is reported. The "medicine" prescribed for this patient, who had diabetes, was found to be vinegar. The police found five other persons who had been treated by Wilson.

Tornado Relief Work—The *Red Cross Courier*, August 23, states that about 500 families in northern Ohio, victims of the tornado of June 28, are still living in tents, and that the final figures show seventy-eight persons killed by the storm, 351 injured, 261 houses totally destroyed, 298 buildings damaged and 7,225 persons made homeless. Up to August 16, about \$215,000 had been awarded to 339 families for rehabilitation purposes. No funds from money raised throughout the state were given those who were financially able to help themselves. Reports from the state committee raising relief funds show that about \$850,000 had been collected to date.

Academy of Medicine Incorporated—The incorporation of the Academy of Medicine of Cleveland has been completed and the secretary of state has issued a charter. The change necessitated the election of a board of directors or trustees by the members who shall hold office for a stated period of years. The new board of directors comprises Drs. Harold Feil, Samuel J. Webster, Edward P. Monaghan, L. Morris, Clyde L. Cummer, Jacob E. Tuckerman, Harold O. Ruh, Frederick J. Wood, Harry V. Paryzek, Lawrence A. Pomeroy, Arthur J. Skeel, Frank S. Gibson, John D. Osmond, Richard Dexter, Harry D. Piercy. The new officers are: president, Jacob E. Tuckerman, vice president, Edward P. Monaghan, secretary-treasurer, H. V. Paryzek.

OKLAHOMA

Personal—Dr. Roy L. Cochran, Caddo, has been appointed director of the full-time county health unit for Pittsburg County.

PENNSYLVANIA

Hospital News—The Spencer Hospital, Meadville, will soon begin the construction of an \$85,000 building to replace the structure damaged by fire.

New Process for Garbage Disposal—Experiments having given satisfactory results, the city of Lebanon has decided to dispose of its garbage by grinding, then discharging it through the outfall sewer into the Imhoff tanks that are a part of the city's sewer works. According to Fox and Davis, the addition of from 10 to 12 tons of garbage a day to the sewage will not increase materially the total solid matter flowing into the tanks, as from 75 to 80 per cent of the garbage is water. It is estimated that the total cost of collection and disposal of the garbage will not exceed \$4 a ton.

Philadelphia

Dr. Piersol's Will—The will of the late Dr. George A. Piersol, professor emeritus of anatomy at the University of Pennsylvania, was presented for probate, August 25. To his son, the father gave his scientific library, charts, apparatus and instruments with the suggestion that such as he may not

desire to keep be presented to the University of Pennsylvania School of Medicine for the sole purpose of the anatomic department.

RHODE ISLAND

Hospital News—Bids have been taken for a \$700,000 building for the Providence Lying-In Hospital. Plans are being drawn for a \$275,000 building for the South County Hospital.

SOUTH CAROLINA

Personal—Dr. Drayton M. Crosson, Leesville, president of the South Carolina Medical Association, is a candidate for Congress from the seventh district.

Children's Clinic—The state board of health, cooperating with the Darlington County health department conducted a children's clinic at Hartsville, August 12-13, which was attended by seventy-six children. It is said that sixty operations for the removal of either the tonsils or adenoids were performed during the two days.

TENNESSEE

Knoxville Epidemic—In a newspaper article, Dr. Marvin Haygood, health officer, Knoxville, August 17, stated, it is reported, that the typhoid outbreak is on the decline. The total number of cases reported since June 1 is 150, with seven deaths. As to the cause of the epidemic the examination of various private spring waters showed that more than 90 per cent of them were contaminated.

TEXAS

Personal—Dr. Samuel Kennedy has been appointed city health officer of Grape Land.

Free Clinic Opened—A clinic, which will provide treatment for people unable to pay, has been opened at Provident Sanitarium, Waco, with a staff comprising thirty-five physicians. Special attention will be paid to the prevention of disease.

Society News—At the recent meeting of the Seventh District Medical Society in Austin, Dr. Thomas J. Bennett, a former president of the state medical association, gave an address. At the meeting of the North Texas Medical Association, Decatur, an old-fashioned barbecue was held at Decatur Lake. The president, Dr. George D. Linn, stated this was the first time the North Texas Medical Association had met in the west end of the district.

Hospital News—Work will begin at once on a new \$50,000 county hospital at Seymour. A new sanatorium to be owned by Dr. James C. Loveless, will be erected at Lamesa. The Johnson-Beall Hospital, Fort Worth, has changed its name to the Southwestern Hospital. Plans have been drawn and the contract awarded for a \$40,000 hospital at Graham. Mr. M. K. Graham donated one half the cost of the hospital and other citizens of Graham and vicinity are donating one half.

University News—The vacancy in the chair of physiology, created by the resignation of Dr. Charles C. Gault, has been filled by the appointment of Eugene Lyman Porter, Ph.D., formerly assistant professor of physiology, Western Reserve University School of Medicine, Cleveland. The vacancy in the University of Texas College of Pharmacy, caused by the death of Dr. Raoul R. D. Cline, has been filled by the appointment of William F. Gidley, B.S., professor of pharmacy at Purdue University. There have been 104 applications received for entrance to the freshman class of the University of Texas Department of Medicine this fall. The class will be limited to sixty, and the scholarship grade of admission this year is a general average of 82 per cent in all premedical subjects.

WASHINGTON

Typhoid at Walla Walla—Four new cases of typhoid fever were reported at Walla Walla August 16. The county health department issued a warning concerning the springs and wells throughout the country. It is reported that of more than 150 samples of water from these sources, more than 90 per cent were found to be contaminated.

Hospital News—A group of nineteen physicians have formed the Walla Walla Hospital Association for the purpose of constructing a nonsectarian hospital at Birch and Palouse streets, for which \$150,000 in bonds will be issued. The management of the hospital will be under the control and direction of such officers and persons as may be prescribed by the by-laws and such as are contemplated by the statutes of the state of Washington.

WISCONSIN

Hospital News—St. Mary's Hospital, Milwaukee, has purchased the residence at 481 Terrace Avenue for a nurses' home—Plans are being drawn for a \$25,000 hospital building for the Lutheran Hospital, Dodgeville

State Medical Society Election—At the annual session of the State Medical Society of Wisconsin, August 20-22, at Green Bay, Dr. Wilson Cunningham, Platteville, was elected president, and Drs. James G. Taylor, Milwaukee, Henry A. Jęgi, Galesville, and Howard E. Curl, Sheboygan, vice presidents. A secretary will be elected in January. Milwaukee was chosen for the next annual convention.

PHILIPPINE ISLANDS

Personal—Col. Edward L. Munson, M. C., U. S. Army, until recently health adviser to the Philippine government, was the guest of honor at a farewell dinner in Manila, June 28.

University News—The following promotions and appointments have recently been made at the College of Medicine of the University of the Philippines, Manila: Dr. J. Eduque to be head of the department of surgery vice the late Dr. P. Guazon, Dr. Carmelo Reyes, associate professor of surgery and gynecology, Dr. H. Acosta Sison, associate professor of obstetrics, Dr. Hermilio Velarde, associate professor of ophthalmology, otology and rhinolaryngology, and Dr. F. Garcia, associate professor of pharmacology. Drs. M. Limson and A. Tupas, promoted to assistant professors of anatomy and pediatrics respectively, assistants in medicine. Drs. Modesta Ignacio, Patricio Ignacio and F. Arcoila, assistants in surgery, Drs. A. Zavalla, A. Agcaoili and A. del Rosario.

GENERAL

Public Health Association Meeting—The next annual meeting of the American Public Health Association will be held in Detroit, October 20-23.

Society News—At the recent meeting of the American Proctologic Society, New York, Dr. Frank C. Yeomans, New York, was elected president. Dr. William A. Rolfe, Boston, vice president, and Dr. Joseph F. Montague, New York, secretary-treasurer.

The Polymyositis Epidemics—On August 19 there had been a total of sixteen cases of polymyositis with seven deaths, at Missoula, Mont., a total of ninety-eight cases at Syracuse, N. Y., and a total of eight cases with one death at Buffalo.

Public Health Nurses—In a comment on public health nursing the *Journal of the Indiana State Medical Association* quotes from a Red Cross director concerning the principles observed by reputable public health nursing agencies in part as follows: (1) Public health nurses do not diagnose or do not prescribe drugs and do not give treatment without a doctor's orders. (2) Public health nurses do not give nursing care after the first visit without a doctor's orders. (3) Public health nurses do not recommend individual doctors but advise patients to go to their family physician. (4) Public health nurses do not recommend that patients change doctors or seek hospital care when they have a family physician.

Faith "Cures"—A study of alleged faith "cures" was made by a committee composed of eight physicians, eleven ministers, three university professors and one lawyer, appointed by the General Ministerial Association of Vancouver to inquire into the authenticity of the alleged cures and present the conclusions which they drew from the facts. According to *The Survey*, 350 persons supposedly "cured," whose ailments covered a list of more than sixty diseases and deformities were investigated. Of this number of patients five had been so distinctly benefited that at the end of six months they could be regarded honestly as cured. Thirty-eight patients showed improvements. 212, no change, although at the time of "anointing" they had been declared cured. Seventeen patients were distinctly worse. Thirty-nine had died and five of the persons anointed had become insane.

Sterility and the Roentgen Ray—That sterility follows constant work with the roentgen ray has been disproved, at least, in the roentgen-ray department of the Royal Victoria Hospital, Montreal. The director, Dr. Alexander H. Pirie, in a letter to the *American Journal of Roentgenology and Radium Therapy* writes that, in the last two months, three members of his staff have had additions to their families. One of these makes roentgenograms all day, one gives treatments and does dental work, the third does fluoroscopic work. The three babies are healthy and well formed. Citing

an instance of which he had personal knowledge, Dr. Pirie adds, however, that even a small defect in the protective apparatus may damage the operator. A stray beam which came through an unsuspected crack in the protection played on the operator for hours each day and caused sterility.

Homicides—In twenty-eight cities, for which data is available, the murder rate has practically doubled since 1900, according to Hoffman. For the United States death registration area in 1922, the rate was 8.4 per hundred thousand for the entire population, 5.6 for the white population and 39.7 for the colored. In Atlanta, Ga., the white murder rate was 16.5 per hundred thousand, the colored rate 105.4, in Birmingham, Ala., the white rate was 26.7, the colored 108, in Memphis, Tenn., the white rate was 24.6 and the colored rate 145.2. The major factor in the murder record is death by fire arms. In 1921 the rate for all methods was 8.5 per hundred thousand and of this 6.2 was due to death from firearms while in England and Wales, in 1922 only sixteen out of 202 deaths were caused by this method. Of seventy-nine cities for which figures were available for 1922 and 1923, Memphis heads the list with a rate of 65, Jacksonville followed with a rate of 61.7. The rate is decidedly higher in the cities of the South than in the cities of the North and West.

LATIN AMERICA

Personal—Dr. J. A. Presno, editor of the *Revista de Medicina y Cirugia* of Havana, president of the Academia de Ciencias, has been elected corresponding member of the Societe de chirurgie at Paris. The French government has also decorated him as chevalier of the Legion of Honor. Prof. E. Vitoria, director of the Sarria institute for chemistry at Barcelona, has arrived in Argentina where he is to deliver a course of lectures at the Buenos Aires and La Plata universities on chemistry and laboratory methods.

FOREIGN

Relief Fund for China—On the basis of a report transmitted through the state department by the minister at Peking the American Red Cross cabled a fund of \$100,000 for the relief of victims of the recent floods in several provinces in China.

Hospital Changes Name—At the next annual meeting of the British Dentists' Hospital, London, founded in 1911 to assist persons unable to pay the ordinary charges of dentists, the name will be changed to the British Dental Hospital. This hospital pays its way with small fees on a regular scale charged for service and the work is done by qualified dentists numbering at present thirty-seven, who must be members of the British Dental Association.

The Junior Red Cross—This is the name of a movement, says the *British Medical Journal*, which is thought to have originated in the schools of Canada about 1916 although it began independently in the schools of Australia at about the same time. It has spread to the schools of twenty-one countries and its members number about 6,000,000 children. Its main object is to inspire children with the idea of service. The organization has begun the issue of the *Junior Red Cross Journal*.

Schick Testing in Australia—At a recent conference of medical officers of health of Australia, the question was raised as to whether there was sufficient material on hand to carry out Schick testing. The Commonwealth Serum Laboratories then announced that there was in stock a specially prepared toxin sufficient to carry out the Schick test on more than 300,000 children and that a practically unlimited amount of toxin was available for issue on short notice, also, that toxin, antitoxin and culture mediums were obtainable.

Tribute to Pawlow—It is proposed to celebrate the seventy-fifth birthday of Prof. Ivan P. Pawlow, the physiologist, September 21, by issuing a souvenir volume of the *Archiv für Biologie Sciences*, the official organ of the Institute for Experimental Medicine at Petrograd [the postoffice name now is Leningrad]. The articles for the special number are to be published in the writer's language. Professor Pawlow has declined any personal official ceremony. He received the Nobel prize in medicine in 1905. His visit to this country in 1923 was unfortunately prematurely terminated by the theft of his money (*THE JOURNAL*, July 28, 1923, page 303).

British Conference on Patent Medicines—At the sixty-first annual meeting of the British Pharmaceutical Congress, held recently at Bath, the principal subject of discussion was whether legislation should be introduced to control the manufacture and sale of patent medicines. Philip F. Rowsell, vice president of the Pharmaceutical Society of Great Britain,

and it was a matter of urgent public necessity to remedy at once the more flagrant abuses which existed in the sale of patent medicines, for, except as patent medicines came within the scope of the Poisons and Pharmacy Act, the trade was subject to no important restrictions, and that the trade was increasing, for in 1914 the receipts from the medicine stamp duty was £360,000, while in 1923 they were nearly £1,250,000.

Contributions to Relieve Distress in Germany—The German central committee in charge of the foreign relief work has issued its report for 1922 and 1923. Receipts of money from other countries totaled 600,000 gold marks, and almost 8,000 tons of articles of food were received. This is included in the 11,000 tons of goods received in 1922 and 14,000 in 1923 valued at 14,000,000 gold marks. In addition to these sums, 42,000,000 were contributed by foreign countries for the feeding of school children, and Germany supplemented this with 21,000,000, besides the 5,000,000 used to carry on the work in October, 1923, when foreign aid for this purpose was withdrawn. The gold mark is the full value of the mark, 238 cents.

Clinical Prize for General Practitioners—The council of the British Medical Association has decided to establish, experimentally, an annual prize of 50 guineas for an essay or lecture for the purpose of stimulating observation, research and record in general practice. It will be called the Sir Charles Hastings Clinical Prize and will be first awarded in 1926. Any member of the association, who is engaged in general practice, is eligible to compete for the prize. The work submitted must include personal observation and experience of the candidate collected in general practice. If no essay is submitted of sufficient merit, no award will be made. The candidate who wins the prize may publish his paper in the *British Medical Journal* or deliver a lecture on the subject at a meeting of the association.

International Dental Federation—At the sixth meeting at Luxembourg, August 3-5, of the International Dental Federation, Dr. Truman W. Brophy, Chicago, president of the federation, was awarded the Miller memorial prize for important work in connection with dentistry. The federation advised the desirability of establishing a dental department under a dental controller in the ministries of health of all countries. Only two or three countries have adopted this course so far. Questions relating to the organization of the next international congress, at which a membership of over 8,000 is expected, were brought forward by the general secretary of the congress. The next meeting was fixed to take place in Geneva August 5-7, 1925, at the invitation of the Swiss National Dental Association.

Personal—Dr. Arthur W. M. Ellis has been appointed to the university chair of medicine at the London Hospital Medical College. Dr. Ellis, during 1909-1910, was resident pathologist of the Lakeside Hospital, Cleveland, and demonstrator of pathology in the Western Reserve University School of Medicine, Cleveland. From 1911 to 1914 he was assistant physician to the Hospital of the Rockefeller Institute, New York. He served throughout the World War, being in charge of the cerebrospinal fever hospital at Bulford in 1915, and then went to France with the First Canadian Division. In 1918, he was appointed adviser in pathology to the fourth army. At the recent meeting of the senate of the University of London, the resignation of Prof. Harry R. Kenwood of the Chadwick Chair of Hygiene at University College, London, was accepted, effective in December. Prof. T. Irisawa, of the Tokyo Imperial University Medical College, has been appointed chief court physician in the imperial household to succeed Dr. T. Ikeda, who resigned. Yun Chi Hyong, who recently received the degree of doctor of medicine from the Kyushu Imperial University, is the first Korean to have that degree conferred by the Japanese government. Prof. W. Ostwald, of the chair of colloid chemistry in relation to biology at the University of Leipzig, has been delivering a course of lectures at the Institute of Applied Chemistry at Barcelona. He is the founder of the German Colloid Chemistry Society and of its official organ, and was instructor at the University of California a few years ago. The city of Warsaw is said to have conferred on Madame Curie, Paris, the title of "citizen emeritus." The French Balzac prize has been conferred on Dr. P. Lucchini for his novel "Notre Dame de Sagesse." He practiced in Corsica before devoting himself to literature under the pseudonym of Pierre Dominique. A tablet was placed by the city authorities on the street and on the house occupied by Dr. E. Gonzalez Serrano of Colmenar, Spain, and a souvenir volume was presented to him by the organized profession in celebration of his fifty-third anniversary of

practice in that locality. The ceremonies concluded with a banquet. The Alvarenga prize has been conferred by the Academia das Sciencias at Lisbon on Dr. Vasco Palmerim for his monograph on "Shock." The *Medicina Contemporanea* states that although this prize was founded years ago, it has been awarded only once before. Dr. Jose Blanc, Madrid, president of the Colegio de Medicos of central Spain, has left for a trip to South America.

Deaths in Other Countries

Edmund Moody Smith, medical officer of health for the State of York, July 23, aged 60.—William Arnold Evans, medical officer of health for Bradford from 1890 until 1912, July 7, aged 62.—Dr. Henry Parent, formerly president of the Ophthalmologic Society of Paris, recently, aged 75.—George H. Oliver, Bradford, England, formerly lecturer in ophthalmology, University of Oxford, April 14, aged 63.—Michael Mohr, associate professor in the University of Budapest, recently.—Thomas David Lister, advisory physician to the National Sanatorium Association, and author of books on industrial tuberculosis and sanatoriums, July 30, aged 55.—Dr. Jorge E. Delgado, professor at the medical school at Medellin, Colombia, member of the legislature at different times and secretary of state during the Concha administration.—Dr. W. Helferich, Munich, chief of the military hospital service.—Dr. Paul Savnik, director of the dermatologic clinic at Agram, formerly assistant at the skin clinic at Innsbruck and at Prague.

Government Services

Final Decentralization Step in Veterans' Bureau

A general order signed by the director of the U. S. Veterans' Bureau provides for the establishment of fifty-one regional offices in centers where the bureau's activities are greatest. This is the final decentralization step in the government's program of aiding disabled World War veterans. These regional offices will conduct the bureau's business in the territory for which they are designated and shall have the following powers, subject to the regulations of the bureau and to the final action of the director:

- 1 Examining of claimants and beneficiaries the making of medical ratings and awarding of compensation claims.
- 2 Granting of vocational training supervision of training and securing employment opportunities.
- 3 Granting of medical surgical dental, hospital care convalescent care and necessary and reasonable after-care.
- 4 When specifically authorized making payments for compensation training allowance and for administrative expenditures.

Each regional office will be in charge of a regional manager who will be responsible to the director of the Veterans' Bureau. It will comprise a medical, claims, rehabilitation, and a service division. There will also be an employment section, a follow-up nursing service, supply section, and other administrative offices. The chiefs of divisions for the regional offices and the members of the claims and rating boards and other personnel will be designated by the regional managers and confirmed by the director of the bureau. Regional offices will be established in the following cities:

Boston	Charlotte N. C.	Minneapolis
Portland Maine	Columbia S. C.	Helena Mont.
Manchester N. H.	Nashville Tenn.	Fargo N. D.
Providence, R. I.	New Orleans	Sioux Falls S. D.
Burlington Vt.	Birmingham Ala.	Denver
New York City	Jackson Miss.	Albuquerque N. M.
Buffalo	Cincinnati	Salt Lake City
Hartford Conn.	Cleveland	Casper Wyo.
Newark N. J.	Indianapolis	San Francisco
Philadelphia	Louisville Ky.	Los Angeles
Pittsburgh	Chicago	Phoenix Ariz.
Washington D. C.	Detroit	Seattle
Baltimore	Milwaukee	Boise Idaho
Richmond Va.	St. Louis	Portland Ore.
Charleston W. Va.	Kansas City Mo.	Dallas Texas
Atlanta Ga.	Des Moines Iowa	Little Rock Ark.
Jacksonville Fla.	Omaha	Oklahoma City

The following territorial possessions will continue to be under the direct supervision of the central office: Philippine Islands, Virgin Islands, Porto Rico, Guam, Hawaii, Samoa and Panama Canal Zone.

Quarantine for Airship

At the request of the Navy Department, the medical officer in charge, U. S. Quarantine Station Rosebank, Staten Island, N. Y. has been directed to designate a medical officer of his station to proceed to Lakehurst N. J., for the purpose of performing quarantine inspection of the passengers and crew of the Rigid Airship ZR-3 on its arrival from Germany.

Foreign Letters

PARIS

(From Our Regular Correspondent)

Aug 8 1924

Twin Births

Recently Professor Cristalli of Naples called attention to the surprising increase in the number of multiple births occurring at Naples during and since the war. Is this phenomenon sporadic, or at least confined to the Italian peninsula, or is it as Cristalli seems to suppose a general finding observed in all the countries that took part in the World War? Dr. P. Balard, obstetrician to the hospitals of Bordeaux, has endeavored to establish the truth with reference to that city by collecting statistics on the number of twin births that have occurred there during the last ten years.

Twin Births Occurring in Bordeaux 1913-1923

Years	Twin Births	Total Births	Twin Births per 1 000 Births
1913	7	4 201	1.66
1914	22	4 130	5.32
1915	17	3 179	5.34
1916	23	3 019	7.61
1917	22	3 711	5.92
1918	18	3 915	4.59
1919	26	4 092	6.35
1920	39	5 944	6.56
1921	37	5 655	6.54
1922	32	5 021	6.37
1923	37	4 875	7.58

It will be seen that at Bordeaux, except for the year 1913 there were, quite regularly, around six twin births per thousand births. At Naples however, the proportion which was about three before the war rose steadily to 8, 9, 12, 17, 26 and 29 per thousand births.

To what cause or causes may this difference be ascribed? In explanation of the remarkable increase in the number of twin births at Naples, Cristalli refers to the changes in the family life during and after the war—the privations to which the women were subjected, the different nature of the food with its progressive and lasting reaction on organic metabolism, since it is an established fact that the birth rate is in inverse proportion to the degree of well being that characterizes a given social group as if Nature tended to reestablish the demographic equilibrium and to preserve the race among poor people with an unusually high infant mortality. It may well be asked to what extent this interpretation seems to hold good. Balard notes that in Cristalli's statistics, it is especially since 1918, and particularly in 1920 and 1921, that the number of twin births is exceptionally high. It would seem that by that time the influence of war restrictions would have ceased to be felt. Cristalli takes no account of the possible influence of syphilis on twin births. Leaving this factor out of account it would seem to me to accept the theory advanced by Cristalli that the twin births must have remained practically stationary in most parts of France as they did at Bordeaux, for at no time during the war did French women have to undergo such food privations as would have any appreciable effect on their metabolism.

A Psychopathologic Novel

Henri Beraud, who in 1922 was accorded the Goncourt prize for his novel, *Le martyre de l'obèse*, has published recently another novel entitled *Lazare*, in which the principal character Jean Mourin, is the victim of double personality, which developed as the result of a violent traumatism. Lazarus is an appropriate name for the hero, since he is

himself in the nature of a resuscitation. Jean Mourin, after a terrible accident, awakes to find himself an entirely different personality from his former ego. He lives in this state of mind in a sanatorium for a period of sixteen years. The accident occurred in 1906. In 1922, Jean Mourin suddenly recovers consciousness of his former self. He has no recollection of his life during the sixteen years spent in the sanatorium. He is informed that, during his disease, his double or second ego learned the tailor's trade, serving as an apprentice to a master tailor. But Mourin, now that he has recovered, does not know even how to hold a needle. His double on the other hand, was unable to play the piano, although, before the accident, Mourin had been a professional pianist. Immediately on his recovery, after sixteen years during which he had not so much as touched the keys, he finds that his musical knowledge is undiminished and his skill unimpaired.

This novel has given rise to a medicoliterary controversy. Dr. Berillon, a professor in the Ecole de psychologie, who was interviewed by a journalist on the subject of this novel, stated that such a case of double personality could not occur, especially if the subject was of pure racial stock. Berillon admitted however that the offspring of a white man and a negress or of a male Eskimo and a woman of the yellow race for example (and thus the issue of two distinctly different types, from the standpoint of physical features and mentality) might, under the influence of a violent shock, either mental or physical, come to feel more distinctly the instincts and tastes of one of the two constituent types, to the detriment or suppression of the instincts and tastes of the other type. In reply to this interview, Beraud contended that the case of Jean Mourin is scientifically possible, and referred in support of his view, to the writings of certain specialists, mentioning more particularly, Bechterew by name. But I do not know that it is necessary that a romanticist should justify all his conceptions. Perhaps it is sufficient if his novels are only interesting.

Canadian Students at Paris

Three hundred men and women students, who are making a study tour of Europe, spent a short time in Paris, where they were received by a delegation of the Association générale des étudiants and representatives of the "Bienvenue française".

BELGIUM

(From Our Regular Correspondent)

Aug 6, 1924

Evacuation of Sick and Wounded by Aeroplane

Chief Physician Picque of the French army, and professor at the Faculté de médecine de Bordeaux, gave exhibitions recently at Brussels and at Liege of the use of aeroplanes for the transportation of the sick and wounded which service has been especially helpful in Morocco and in the Levant. In Morocco alone, more than 2000 wounded have been evacuated by the air route from Haut Atlas to the coast hospitals and in the region of Bordeaux, the organization of evacuation by airship was beginning to be carried out for the more distant garrisons. From the standpoint of comfort, ease of transportation and rapidity, no other method can equal that of the aeroplane. The interior of the cabin is equipped with stretchers, electrically heated coverlets, boilers and reserves of oxygen for those who have chest wounds.

Perineal Prostatectomy

Before the Société belge d'urologie, Dr. Lemoine recently entered a plea for perineal prostatectomy. He contends that this operation has been unjustly discarded, and he cites all the indications in certain special cases, notably in the case of tumors that develop exclusively around the canal or in

the subcervical or the subtrigonal region but leave the internal sphincter of the bladder unembarrassed

From the technical standpoint, Dr Lemoine employs the method of Young, which thus far has failed to cause him the variations reported by others. On the contrary, this operation has permitted him to operate with success and without the least operative shock in cases in which the patients presented an elimination of phenolsulphonephthalein below 10 per cent in two hours and had undergone previously a prolonged drainage through cystostomy

A Special Diploma for Medical Specialists

The much discussed question as to whether or not a special diploma should be established which prospective specialists would be required to secure before assuming the title of "specialist" in any field (a proposition that M. De Beule so brilliantly defended before the Academy of Medicine) has been the subject of investigation by a commission composed of members of the Academy of Medicine. This commission has now reported unfavorably to the plan, as will be seen from these two resolutions: 1. The commission decides anew that it is not advisable to establish, in addition to the present legal requirements for a medical diploma, an obligatory examination for the practice of specialties. 2. The commission suggests, however, the creation of a council of the order of physicians.

This decision, which does not accord with the views of Dr De Beule, is likewise opposed to the opinion expressed by the Conseil de perfectionnement de l'enseignement supérieur. This organization had demanded the establishment in the Facultés de médecine of a special medical diploma, attesting that the holder possesses the ability and the necessary preparation to practice a given specialty.

Medical Inspection of Schools

The very young society Association des médecins hygiénistes de Belgique, the establishment of which I mentioned in a recent letter, has already given evidence of great vitality. It has taken on itself the task of criticizing the law of 1914 by which medical inspection of schools was inaugurated. Dr Charbonnier has endeavored to show that the medical inspection of schools should be extended to private schools of all kinds. The children of the bourgeoisie need medical inspection just as much as the children who attend the free public schools. In the districts in which medical inspection has been introduced in the private schools, the results secured are proof of the foregoing contention, for the proportion of interventions resulting from the examination for adenoid growths, hypertrophy of the tonsils, defective hearing and vision, hernia, phimosis, varicocele, etc., is the same as in the free schools. The society is making a special study of the question, and, when this is finished, it plans to draw up a resolution to be submitted to the government authorities.

Plans for the Organization of a Society of Otolaryngology, Rhinology, Neurology, Ophthalmology and Neurosurgery

July 12, 1924, a number of Belgian physicians met at Brussels to consider plans for the foundation of a society of otology, rhinology, neurology, ophthalmology and neurosurgery. It is planned to establish between these various departments of medicine such a connecting link as the complexity of their several disciplines demands. The members of the temporary committee are: for surgery, Drs De Beule (Ghent) and Christophe (Liege), neurology, Drs De Craene (Brussels), Rodolphe Ley (Brussels), and L. Van Bogaert (Antwerp), ophthalmology, Drs H. Coppez (Brussels) and Weekers (Liege), otorhinolaryngology, Drs Buys (Brussels) and Hennebert (Brussels).

The French Association for the Advancement of Science

The influential Association française pour l'avancement des sciences will hold its annual congress this year at Liege. At this meeting the University of Liege will confer on M. Poincaré and M. Regaud an honorary degree. The congress consists of twenty-four sections dealing with the various mathematical, natural, medical, biologic, geographic, political and applied sciences. Five sections deal with medicine, namely, zoology and anatomy, the medicosurgical sciences, odontology, roentgenology and social medicine.

VIENNA

(From Our Regular Correspondent)

Aug 18, 1924

Health Statistics for the First Half of 1924

The year 1924 shows in its first six months a decided improvement, in regard both to morbidity and to mortality, over its predecessor. The number of cases of infectious diseases has been constantly below the corresponding figures of last year, especially with regard to influenza and diphtheria, while scarlet fever and whooping cough are nearly as frequent. The number of deaths is 0.5 per cent lower, being on an average 105 daily. The relative frequency of deaths, considered from the standpoint of etiology, has remained stationary. Tuberculosis and diseases of the circulatory system claim the most victims, but it is a fact that the former prevalence of tuberculosis in mortality tables is now going down constantly, and in certain months (May-June) it is surpassed by the other condition mentioned. The explanation is offered that all seriously ill with tuberculosis died during the war and in the five years of starvation following it, so that only the lightly infected are now left to die. Cancer is more frequently diagnosed than five years ago, perhaps because of the better opportunities of recognizing it, while cholera, typhus and smallpox hardly ever appear in the statistics. Dysentery was fatal in eleven cases, and epidemic meningitis in three.

Alcohol and Juveniles

The antialcohol movement is not very successful among adults in our country, partly owing to lack of funds for conducting a powerful campaign, partly because the really deciding factors have little or no interest in promoting its aims. On the contrary, the "pro-alcoholists" have organized a system of lectures to show that moderate consumption of alcoholic beverages is in no way harmful to the human race, but is apt to produce an improvement in mentality and good-naturedness. "Poems, jokes, songs and music thrive especially where the mind is somewhat 'brightened' by a dash of alcohol." Nevertheless, the police reports in Vienna should not be overlooked in this respect. In the month of May alone, the number of juveniles who had to be locked up for being drunk or disorderly on the streets (125) was four times that of the previous month. They were 5 per cent of all persons dealt with on account of drunkenness. Only 3 per cent of the juveniles were girls (from 16 to 18 years). The antialcohol society of this city, which is assisted by the endeavors of the municipality, has introduced antialcohol teaching in the schools for apprentices, the evening schools for laborers and office girls, and the higher schools. Lately the 'scout' movement has been extensively propagated in this country and its health-giving aims have found much favor in the lower classes of the population. One of the chief postulates of all "scouting" is absolute abstinence from alcohol.

Statistics of War Invalids and Cripples

The Municipal Board of Invalids has published a report covering the entire work done by that department in 1923.

The board has been called on to assist 38,895 invalids, or more than double the number of the previous year. The war invalids are mostly chronically incapacitated, their complaints and conditions of health are getting worse every year, and the loss of light work—increased unemployment in the country—naturally throws an extra burden on the board instituted to aid and assist them. Of the applicants, 3,565 were found to require hospital treatment as inpatients, while 2,396 could be treated in outpatient departments or dispensaries. Of the total figure of 5,961, no less than 834 had to be directed to surgical wards and 4,080 to medical treatment. While in 1922, the ratio of inpatients to outpatients was 71:29, in 1923 it was 60:40. This proves that gradually the really severe cases are disappearing through death while the surviving invalids can be treated more or less 'conservatively'. Of the patients admitted to the hospital wards—only special war-invalid hospitals are entrusted with their care—42 per cent were suffering from tuberculosis or various kinds, 6 per cent from circulatory troubles, 13 per cent from diseases of the central or peripheral nervous system, 8 per cent from rheumatic conditions, 18 per cent from results of trauma, 1 per cent from malaria and its effects, and 0.1 per cent from venereal diseases, while 2.5 per cent had eye troubles. As regards the extent of invalidity, 10 per cent were classified below 25 per cent of invalidity and 31 per cent above 50 per cent of invalidity. The first group does not get any financial assistance besides free treatment and medicine, the last group gets a pension amounting to from 70 to 100 per cent of a laborer's earnings. Eight hundred and fifty-nine invalids died in 1923 at least 60 per cent of whom had been incapacitated as the result of war wounds. Tuberculosis carried off 50 per cent, other pulmonary trouble 6 per cent, diseases of the circulatory system 13 per cent, kidney trouble, 4 per cent, diseases of the brain and nervous system, 8 per cent, disorders of the alimentary canal, 2 per cent. Six per cent succumbed to neoplastic growths and 2 per cent committed suicide. Of the tuberculous lesions proving fatal, 93 per cent were situated in the lungs, 4 per cent in the brain, and the remainder in the bones or the intestines. Eighteen per cent of persons dying were between 20 and 30 years old, 31 per cent from 30 to 40, 40 per cent from 40 to 50 and 11 per cent over 50. Only 8 per cent of them had been classified as having disability 25 per cent and an equal number as between 25 per cent and 55 per cent. In 114 cases the Board of Invalids had to renew prosthetic appliances, or procure new apparatus for the applicants, besides five telephonic or acoustic appliances for the deaf.

The Incidence of Congenital Syphilis in Austria

In the regular reports published by the Austrian ministry for social welfare Dr. Hochsinger deals with the problem of congenital syphilis as appearing in an examination of 145,290 new-born babies and those examined in the three years 1919-1921. Before 1914, and in the first four years of the war, the same author has examined or received reports of 123,284 new-born and infants and had come to the conclusion that the percentage of congenital syphilis in this age group was fairly constant before the war, and had dropped markedly in the war years. Dr. Hochsinger explained the diminished proportion by the fact that a large percentage of the male population was under arms and either received an intensive treatment of their old syphilis or in case of freshly acquired disease was subjected to intensive treatment—the combined mercury-arsphenamin method. The result was the birth of more healthy children than formerly. After the war however this intensive treatment could not be given. In the investigation by Dr. Hochsinger only those cases were regarded as positive in which there were present manifest signs of congenital syphilis or the fetus was macerated. No Wassermann reaction was made, as it is not absolutely

reliable in that respect. For the sake of comparison, only those institutions were chosen that had reported for the years 1911-1914, 1915-1918 and 1919-1921. In one institute in peace time, 2.54 per cent of 3,064 babies had congenital syphilis, in war time the figure had dropped to just 1 per cent. In the last triennium it remained about equal. In a second institute, it stood before the war at 1.17 per cent, in the later period 0.7 per cent. In the gynecologic and obstetric clinics however, one sees an increase of the 'syphilitic index' after the war. It stood at 1.87 per cent until the year 1914, dropped to 1.4 during the war, and is now at 2.35 per cent, or the highest figure in ten years. The highest figure ever reached in a Vienna institute before the war was 1.98 per cent.

It is interesting to note that of the syphilitic offspring 88 per cent were born dead, and 12 per cent born living while the last year considered (1921) shows 83 per cent dead and 17 per cent living children, or a slight qualitative improvement. In the provincial institutions, especially in the larger cities of Graz, Innsbruck, Linz, Salzburg and Klagenfurt we find a decided increase of the relative frequency of syphilitic offspring. In Linz for instance it was 0.9 per cent before the war, 0.88 per cent during the war, but it leaps suddenly to 2.46 per cent in 1920. In Salzburg it rose from 1.7 per cent to 2.1 per cent. In Klagenfurt (southern Austria) the percentage was 2.15 per cent before the war, dropped to 1.45 per cent and went up to 4 per cent on an average. (It reached 5.74 per cent in 1920.)

Details of the figures used for compiling this comparative study may be mentioned. In nineteen different maternity institutes 55,878 children were born in the period from 1919 to 1924 with 654 syphilitic offspring (2.1 per cent). Maceration took place in 1 per cent of all births on an average with 1.4 per cent in 1920 as the maximum. In children's hospitals 3,592 infants were admitted in 1919, with 22 per cent syphilitic patients, in 1920 5,233 with 2 per cent syphilitic, in 1921 4,743 babies with 4.15 per cent syphilitic cases. In the outpatient department the figures for the years 1919, 1920 and 1921 were 22,609 infants (0.8 per cent syphilitic), 24,185 (0.9 per cent), and 29,150 (0.8 per cent). Thus in concluding, Dr. Hochsinger says that the diminished ratio of syphilitic offspring manifested during the war, is rising constantly and has reached an increase of 25 per cent in the maternity wards while during the last year under consideration, it reached the highest figure noted in eleven years.

Marriages

WILLIAM HENRY McMAHON to Miss Alberta Marie Comstock, both of Norwalk, Conn. August 12.

WILLIAM E. DELANAY, Jr., Williamsport, Pa., to Miss Alice McMullen of Cumberland, Md. June 18.

EDMUND A. W. SCHOLTER, Milwaukee, to Miss Irene Rose Brielmayer of River Falls, Wis. July 5.

WILLIAM WAGNER, Cleveland, Wis., to Miss Lillian Margaret Anglin of Oshkosh, July 8.

CHARLES RYAN, Des Moines, Iowa, to Miss Esther Justensen of Pine City, Minn. July 12.

M. GREGORY CHADMAN, Lancaster, Pa., to Miss Margaret Noel of Philadelphia, May 28.

MARTIN WERRA, Waukesha, Wis., to Miss Elsie D. Dudenhofer of Milwaukee, June 28.

JONATHAN K. JAMES, Delaware, Ohio, to Miss Mary Betty Bond of Dayton, August 9.

HAROLD HAMNETT to Miss Mary Kathleen Kopp, both of Princeton, Ill. August 2.

PAUL FORGAVE, St. Joseph, Mo., to Miss Ellen Clissen of Cleveland, June 31.

Deaths

Walter Willis Rosser * Muskogee, Okla., Vanderbilt University Medical Department, Nashville, Tenn., 1898, member of the Medical Association of the State of Alabama, served in the Spanish-American and World wars, formerly a contract surgeon in the British army, for four years surgeon to the Rand Consolidated Gold Mines, Johannesburg, South Africa, chief of the tuberculosis section of the U S Veterans' Hospital No 90, aged 48, died, August 15, at Stevenson, Ala., of heart disease

John Timothy Geraghty * Baltimore, Johns Hopkins University Medical Department, Baltimore 1903, member of the American Urological Association, and the American Association of Genito-Urinary Surgeons, associate professor of clinical urology at his alma mater, aged 48, died, August 17, at the Johns Hopkins Hospital

S Marion Steele, Ingram Branch, W Va., College of Physicians and Surgeons, Baltimore 1886, member of the West Virginia State Medical Association, formerly mayor of Moundsville, at one time superintendent of the Weston State Hospital, Weston, aged 65, died suddenly, August 11

Leonard Francis Hatch * Vineland, N J., University of Michigan Medical School Ann Arbor, 1887, formerly professor of surgery at the College of Physicians and Surgeons Boston, served in the M C, U S Army, during the World War, aged 60, died, June 7, of aortic aneurysm

Joseph Smith Jones, Columbus, Ohio, Starling Medical College, Columbus, 1898, member of the Ohio State Medical Association, formerly assistant professor of therapeutics at the Ohio State University College of Medicine, Columbus, aged 51, died, August 11, of angina pectoris

Jabez Sparks Parker, Philadelphia, University of Pennsylvania School of Medicine, Philadelphia 1897, member of the Medical Society of the State of Pennsylvania, aged 55, died suddenly, August 11, near Point Pleasant, Pa., of heart disease

Christopher Sheppard * Ontario, Calif., Victoria University Medical Department, Toronto, Ont., Canada, 1890, formerly health officer of Ontario, aged 70, died suddenly, August 12, of heart disease

Mary Krom, Winterton, N Y., Denver (Colo.) College of Medicine, 1893, member of the Medical Society of the State of New York, aged 70, died, June 28, at Princeville, of carcinoma of the stomach

William H Parker, Red Ash Ky., University of Louisville School of Medicine, 1890, member of the Kentucky State Medical Association, aged 73, died, June 3 at Burgin, of cerebral hemorrhage

Bertha T Caldwell, Johnstown, Pa., Woman's Medical College of Pennsylvania, Philadelphia, 1893, aged 56, died, August 10 at the Memorial Maternity Hospital, of injuries received in a fall

Joseph R Puryear, Lebanon, Tenn., Vanderbilt University Medical Department, Nashville, 1881, member of the Tennessee State Medical Association, aged 64, died, May 5, of chronic nephritis

Francis A Neville * Meredosia, Ill., Hospital College of Medicine, Medical Department Central University of Kentucky, Louisville, 1887, aged 63, died suddenly, in August, of heart disease

Samuel S Simpson, Clarendon, Va., College of Physicians and Surgeons, Baltimore, 1885, member of the Medical Society of Virginia, aged 61, died, May 14, of cirrhosis of the liver

Joseph Thomas Davis, North Emporia, Va., University College of Medicine, Richmond, 1903, member of the Medical Society of Virginia, aged 50, died, July 7, of cirrhosis of the liver

Frank T Briggs * Bristol, Vt., Baltimore (Md.) Medical College, 1897, aged 58, died, June 28, at the Mary Fletcher Hospital, Burlington, as a result of a carbuncle and diabetes mellitus

John Coulter Russell, Warren, Pa., Western Reserve University School of Medicine Cleveland, 1884, member of the Medical Society of the State of Pennsylvania, aged 65, died, July 23

Alonzo Lyons McNeill, Epworth, Iowa Chicago (Ill.) Homeopathic Medical College, 1895, member of the Iowa

State Medical Society, aged 67, died, August 10, of heart disease

David Preston Wyson, Port Washington, N Y., Washington University School of Medicine, Baltimore, 1872, aged 71 died, June 25, at Camden, Maine of angina pectoris

Franklin T Johnson, Jr., Burns, Kan., Kansas City (Mo.) Medical College, 1904, aged 45, was killed, August 8, when the automobile in which he was driving overturned

Louis Domhoff, Cincinnati, Medical College of Ohio, Cincinnati, 1894, member of the Ohio State Medical Association, aged 56, died August 5, following a long illness

Oliver Milham, Bridgman, Mich., St Louis (Mo.) Medical College, 1874, aged 84, died May 9, at the Mercy Hospital Benton Harbor, of chronic interstitial nephritis

Hiram Carson Aurand, Bellevue, Ohio, Kentucky School of Medicine, Louisville, 1892, formerly mayor of Bellevue, aged 58, died, August 12, at Cleveland

James Arthur Lytle, Bolivar, Mo., College of Physicians and Surgeons, Keokuk Iowa, 1892, aged 64, died, July 6, at Burns, of cerebral hemorrhage

Thomas Franklin Hamilton, Greybull, Wyo., John A Creighton Medical College, Omaha, Neb., 1917, aged 39, died, June 6, of a gunshot wound

John M Milton, Packton, La., University of Georgia Medical Department, Augusta, 1877, aged 73, died, June 15, at the Charity Hospital, Shreveport

George Henry Dowsey * Great Neck, N Y., Medical Department of the University of the City of New York, 1892, aged 59, died, August 13

J Frank Merritt, Jr., Blue Mountain Miss., University of the South Medical Department Sewanee, Tenn., 1900, aged 48 died, May 20, of pneumonia

Luther Bassett Kline * Catawissa, Pa., Jefferson Medical College of Philadelphia 1867, aged 81, died, August 5, at the Bloomsburg (Pa.) Hospital

William Kirkpatrick Andrews * Mill Village, Pa., Medical Department of the University of the City of New York, 1889, aged 57 died, August 5

Thomas H Pawling * Avoca, N Y., University of Buffalo Department of Medicine 1884, aged 67, died, August 4, following a long illness

Robert F McReynolds, Knox City, Mo., St Louis Medical College 1874, formerly member of the state legislature, aged 70 died, August 15

Jeremiah J Sullivan * Dunkirk N Y., University of Buffalo Department of Medicine, 1887, aged 62, died, July 27, of heart disease

Joel Cooperrider, Brownsville, Ohio Medical College of Ohio Cincinnati, 1876, aged 74, died, August 5 at Santa Fe, N M, of neuritis

Richard K Ferguson, Miles, Texas, Memphis (Tenn.) Hospital Medical College, 1890, aged 65, died, July 23, of cerebral hemorrhage

Silas Ballard, Coleman, Texas Memphis (Tenn.) Hospital Medical College, 1894, aged 58, died, July 16, of a gunshot wound

John Kendrick Castleberry, Nacogdoches Texas, Gate City Medical College, Texarkana, 1904, aged 43, died, July 15, of septicemia

George W Plimell, Science Hill, Ky., Eclectic Medical Institute, Cincinnati, 1877, Civil War veteran, aged 84, died, August 3

Hugh Louis Sanders * Logansport, La., University of Nashville (Tenn.) Medical Department, 1903, aged 49, died, August 4

John McDaniel Blair, Trevat, Texas (licensed Texas under the act of 1907) aged 69, died, June 10 of osteocarcinoma

Roxie Ellen Bates, Morenci Mich., University of Michigan Medical School, Ann Arbor 1887, aged 68 died August 6

Fredd Orlando Pryor * Santa Rosa, Calif. Cooper Medical College, San Francisco, 1898 aged 53, died, July 3

William E Dignen * Buffalo University of Buffalo Department of Medicine, 1891, aged 60, died July 9

Henry F Hudson, Greenfield, Tenn., Louisville (Ky.) Medical College, 1873 aged 77, died, June 30

L J Thomas, Dublin, Ga., Atlanta Medical College, 1882, aged 85, died, May 19, of senility

George W Hill, Cave-in-Rock, Ill (licensed, years of practice), aged 74, died, July 24

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNALS BUREAU OF INVESTIGATION OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

BIOFOOD

A Worthless Nostrum Exploited Under Pernicious Claims

"BioFood" is a patent medicine combination put out by a concern that seems to go under various names 'Biochemical Food Products Corporation' Bio Products Company and BioFood Corporation. The Biochemical Food Products Corporation was incorporated in Illinois, Oct 7 1920. The incorporators are given as Eugen Kuhne, S Ashley Guthrie and Benj H Weisbrod the two latter being lawyers. On Aug 30, 1922, the name was changed to BioFood Corporation.

Eugen Kuhne who is said to have been a contracting engineer and therefore competent to go into the 'patent medicine' business seems to be the president, treasurer and manager of the concern. One Joseph M Pierce, whose qualifications to sell medicaments seemed to rest on his previous experience in the meat business was the vice president but was succeeded later by John E Kilker, formerly a BioFood salesman.

BioFood has been shrewdly and cleverly marketed. The psychic claptrap of the 'patent medicine' faker has been used to good advantage. The name itself 'BioFood,' may be counted on to disarm the newspaper publisher who might bar from his pages patent medicine advertisements. The impression is given that the stuff is a food, and not a medicine. The physical layout is equally clever. BioFood is sold at a high price—\$10.00 a 'treatment'—which in itself can be counted on to impress the public with its value. The treatment consists of a box labeled A and two bottles labeled, respectively B and C. 'BioFood A' consists of large tablets resembling in general appearance the tablets of malted milk put up by various manufacturers. BioFood B also consists of tablets but smaller in size. BioFood C is a 5 ounce



The BioFood Treatment—price \$10.00, not worth 10 cents

bottle of a dark brown liquid with an aromatic odor. BioFood A' is claimed to contain "Sodium, Calcium, Iron, Manganese, Silicon, Carbon, Potassium, Magnesium, Lactophosphates, Glycero-phosphates, With Lactose, Cocoa and Charcoal as Filler. BioFood B" is labeled as containing a combination of chemicals among which are sodium citrate, sulphate, lithium glycerophosphate and potassium sulphate. BioFood C, the liquid according to the label, "contains, among other ingredients, ammonium carbonate, magnesium glycerophosphate, iron glycerophosphate, calcium sodium and manganese." As no quantities are given on any of the labels the alleged formulas are obviously meaningless.

THE BIOFOOD THEORY

In the exploitation of BioFood a thesis is put forward that reminds one of the dictums on which cults are founded. In fact, the BioFood exploiters seem to use as a basis the fantastic theory of Schussler and his so-called bio-chemic treatment by means of 'twelve tissue remedies'. The BioFood theory may be briefly stated thus:

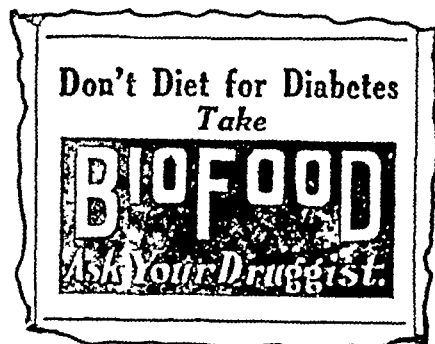
(1) Our bodies are composed of twelve tissues containing sixteen elements

(2) The same sixteen elements are found in virgin soil which has not been subjected to intensive cultivation

(3) The soil today, because of intensive cultivation and the use of commercial fertilizer is deficient in many of these elements therefore, our foods are deficient in the elements necessary to keep our bodies fit. Furthermore, we still further devitalize foods in preparing them for consumption.

(4) BioFood contains all the elements in which modern soil and food is deficient and thus 'builds up the body by supplying all the elements which nature intended man to have and thus gives nature a chance to create her own antitoxins and effect a cure.

Thus then, is the theory on which the exploitation of BioFood is based. The claim that because of soil deficiency, the natural foods of today are lacking in certain essential elements necessary to health has no foundation in fact. It is



One of the viciously cruel slogans of the BioFood fakery. This advertisement ran in newspapers and street cars.

true—in fact a platitude—that some of our prepared foods are over refined and devitalized. But the idea of overcoming the deficiency of certain elements in over-refined foods by taking pills, powders or liquids alleged to contain the deficient elements is unsound and absurd.

The ignorance of the BioFood people is evidenced in other parts of their literature. We read for instance:

Normal untreated cereals when placed in a warm moist atmosphere will create worms. These worms do not attack the flour from the outside but are chemically created within.

That worms can be spontaneously generated in decaying cereals is an idea that would be laughable if one could forget that many people believe that similar forms of life ("vinegar eels," cheese maggots, etc.) are created *de novo*. Here is more BioFood biology.

Every living body whether human or animal resists worms as long as its chemistry is perfect. There is no death. Chemistry continues even in supposedly dead bodies and creates worms and maggots.

That such preposterous nonsense can be put forward and accepted by the public is a sorry commentary on the present state of national intelligence.

WHAT BIOFOOD THINKS OF MEDICINE

Eugen Kuhne who seems to be the leading spirit in the exploitation of BioFood evidently has definite opinions of the medical profession in general and that of Chicago in particular. A Chicago physician who had made uncomplimentary remarks about BioFood received a letter from the concern in the course of which Kuhne said:

"While Chicago has many physicians it cannot boast of but a small percentage who can be termed as belonging in the better class."

Kuhne's English may be a little weak, but his convictions seem strong. He then continued:

"Whenever a physician is open minded then I am always more than pleased to explain BioFood to him in the presence of his patient and where I find a physician open minded I never expose the gross ignorance of the average physician but where I find a physician who himself accomplishes nothing but does not hesitate to condemn BioFood there I am usually unmerciful and I put to such physician questions about hydrochloric acid about amino acids and usually succeed in less than five minutes time to convince the patient that his or her physician is ignorant of the fundamentals of life and chemistry."

Thus would Kuhne the ex-engineer, crush the poor medical man under a mass formation of technology on hydrochloric

and amino acids. Kuhne suggests that some physicians do not prescribe BioFood 'because that would make their patients well and they would naturally lose their income.' But in spite of Kuhne's poor opinion of physicians he seems to need them in his business and one of the pieces of BioFood advertising contains a long and fulsome puff of the "patent medicine" by Arthur Bremken MD. Apparently, Bremken was employed by the BioFood concern. In his testimonial Bremken states that since November, 1922, he had applied himself "very closely to the study of BioFood" and that he had been from early morning until late at night in the offices of the BioFood Corporation with access to their files examining their patients and acquainting himself "with the underlying thought and method of the men in back of BioFood." After due study Dr. Bremken reaches the conclusion "that BioFood is the most logical common sense and scientific method of treating the majority of diseases."

According to our records, Arthur Bremken was born in Europe in 1874 and was graduated in 1900 by the University of Illinois, College of Medicine. He was licensed in Illinois in 1901 and in Minnesota in 1910. Dr. Bremken seems to have practiced in Chicago for a short time after he was graduated. He then seems to have practiced for short periods at Spring Grove Ill., Richmond, Ill., and Bronson, Minn. In 1912 he was at Pine River, Minn., where he seems to have stayed until 1922.

SOME PERNICIOUS ADVICE

The BioFood advertising campaign has been extensive—full page advertisements in newspapers, half-page advertisements in prostituted self-styled medical journals and cruelly mendacious advertisements in the Chicago street cars. Of the latter there is one reading:

DON'T DIET FOR DIABETES TAKE BIOFOOD

Whether the heartless disregard for human life expressed in this advertisement is the result of crass ignorance on the part of the BioFood concern or something worse makes little difference so far as its effect on the public is concerned. In addition to the display advertisements an elaborate follow-up series has been used to catch the potential victims that might answer some of the BioFood advertising.

A complete "treatment" of BioFood—price \$10.00—was purchased and submitted to the A M A Chemical Laboratory for analysis, although it was not expected that anything that the laboratory might find would make BioFood seem any more preposterous than it was made to seem by the claims put forth. An abstract of the laboratory report follows:

LABORATORY REPORT

One box of "BioFood" distributed by the Biochemical Food Products Corporation, Chicago, was purchased from a local druggist, price \$10.00. The box, a relatively large size, contained three smaller packages, labeled "BioFood A," "BioFood B" and "BioFood C," respectively.

BioFood A—The box of "BioFood A" contained ninety tablets, each tablet occupying an individual cache in a "sanitary package." According to the label, "BioFood A" contains

Sodium Calcium Iron Manganese Silicon Carbon Potassium Magnesium Lactophosphates Glycerophosphates with Lactose Cocoa and Charcoal as Filler. Free from Alcohol and Narcotics. Not habit forming.

The average weight of the tablets was 1.65 Gm (about 25 grs). Qualitative tests confirmed the presence of the metallic elements claimed. Tests were also positive for phosphate (PO_4), sugar, fat, and small amounts of chlorid, sulphate and carbonate. Alkaloids, iodids and emodin-bearing (laxative) drugs were not found. Silicon, of course, could not be present as such, but there was present a large amount of substance insoluble when digested with sulphuric and nitric acids, having the properties of magnesium silicate (talc). From the qualitative and quantitative analyses made "BioFood A" may be considered to be composed essentially of milk sugar and flavoring in which has been incorporated small amounts of iron, calcium and manganese salts, and phosphate either as such or in combination such as glycerophosphates. The amount of iron in one tablet would be .016 Gm ($\frac{1}{4}$ grain), the amount of manganese .002 Gm ($\frac{1}{50}$

grain) and calcium .016 Gm ($\frac{1}{4}$ grain) and talc .02 Gm (3 grains).

BioFood B—The bottle of "BioFood B" contained thirty-one white tablets. According to the label:

BioFood B contains a combination of chemicals among which are sodium citrate sulphate, lithium glycerophosphates and potassium sulphate. These are the salts found in the most beneficial mineral springs. BioFood B is not a physic.

Each tablet weighed approximately .075 Gm (about $\frac{1}{2}$ grs). Qualitative tests indicated the presence of sodium, potassium acetate, chlorid and citrate. Phosphate and lithium were not found by use of delicate tests although the presence of these radicals is declared on the label. Calculating from the quantitative analysis made "BioFood B" may be considered to consist essentially of:

Potassium acetate	15 parts
Sodium chlorid	25 parts
Sodium sulphate	25 parts
Sodium citrate (anhydrous)	11 parts
(Equivalent to 13.8 U S P)	
Moisture	11 parts
Excipient	13 parts
	100 parts

16 THE CHICAGO MEDICAL RECORDER

BIOFOOD

Reg. U. S. Pat. Office

"Makes Dietetics an Exact Science"

**THE SUPREME DEVELOPMENT
of the BIOCHEMIC PRINCIPLE**

Biofood a prodigious founding results through compensating
for deficiencies in the modern diet. Physicians will be paid
in full and it is well in so-called hopeless cases of

LOCOMOTOR ATAXIA
STRUCTURE
BRIGHT'S DISEASE
TUBERCULOSIS

SYPHILIS
ARTERIAL SCLEROSIS
DIABETES
PARKINGTON'S DISEASE

BIOCHEMICAL FOOD PRODUCTS CORP.
4450 Ravenswood Avenue CHICAGO

Yes BioFood was able to get its advertising accepted by medical journals—of a type that are a credit neither to medicine nor journalism.

For each tablet, this would be equivalent to potassium acetate .011 Gm (17 grains), sodium chlorid .019 Gm (29 grains), sodium sulphate .019 Gm (29 grains) and sodium citrate U S P .010 Gm (15 grains).

BioFood C—The bottle of "BioFood C" contained about 150 cc (5 fluid ounces) of a dark brown liquid having an aromatic odor. According to the label:

BioFood C contains among other ingredients ammonium carbonate, magnesium glycerophosphate, iron glycerophosphate, calcium sodium and manganese. Free from alcohol and narcotics. Not habit forming.

Qualitative tests indicated the presence of acetate, phosphate, trace of sulphate, trace of chlorid, calcium, iron, sodium and ammonium (NH_4^+). Sugar, alkaloids, iodids, manganese and carbonate were not found although the latter two are declared to be present, according to the label. Tests also indicated the presence of glycerin. The solution was acid to litmus. From quantitative estimations it is evident that BioFood C resembles Solution of Iron and Ammonium Acetate U S P (Basham's Solution), modified by the addition of very small amounts of calcium, magnesium and sodium and phosphate compounds. The label claims the presence of ammonium carbonate and extols the virtue due to this product. Obviously ammonium carbonate 'the anti-acid for various gastric disturbances' cannot be present as the product contains free acetic acid.

A CHANGING PHASE OF THE "PATENT MEDICINE BUSINESS"

How long will this piece of quackery continue? Just so long as the BioFood Corporation has money to spend on advertising and newspapers and street car companies are willing to share in the profits of quackery by accepting such advertising. The BioFood concern is merely one of many 'patent medicine' exploiters that attempt to capitalize the

1 The complete report will appear in the Annual Reports of the A M A Chemical Laboratory.

University of Tennessee
Vanderbilt University
University of Toronto
National University Athens Greece

(1923) 75
(1924) 75 91 1
(1918) 90 1
(1911)* 79 5

College INCREASED BY RECIPROCITY
Emory University School of Medicine
University of Georgia
Northwestern University
Tulane University

Year Reciprocity
Grad with
(1922) Georgia
(1922) Georgia
(1923) Mississippi
(1921) Mississippi Georgia
(1921) Tennessee Mississippi
(1917) Texas

Vanderbilt University
* Graduation not verified

Book Notices

ANESTHESIA By James Taylor Gwathmey M.D., Anesthetist to the New York Skin and Cancer, Columbia and Peoples Hospitals. Second edition. Cloth. Price \$6.50. Pp. 799 with 273 illustrations. New York: The Macmillan Company, 1924.

In his preface to the new edition of this work, Gwathmey calls attention to modern methods associated with anesthesia which have become well established. These include the heating of the ether vapor, oil ether colonic anesthesia, spinal analgesia and local and paravertebral anesthesia. The book includes among other things a history of anesthesia, a chapter on physiology, a special chapter on each of the most important anesthetics and one on each of the important methods of administering anesthetics. Concluding chapters deal with the medicolegal status of the anesthetist, anesthesia during the World War and painless childbirth and oxygen. Special chapters are included on the use of rebreathing by Willis D. Gatch, on local anesthesia as applied in dentistry by Herrmann Prinz, on intravenous anesthesia by Drs. William F. Honan and J. Willis Hassler, and on ethylene anesthesia by Arno B. Luchhardt. Other contributors include Charles A. Elsberg, Walter S. Sutton, James F. Mitchell, William Seaman Bainbridge and John W. Crim, former assistant United States attorney who is responsible for the section on the medicolegal phases of the anesthetist. The book is one of the most complete and informative that has been prepared on the subject and is essential to any one giving special attention to anesthetics and their use.

CANCER: HOW IT IS CAUSED, HOW IT CAN BE PREVENTED By J. Ellis Barker. With an Introduction by Sir W. Arbuthnot Lane. Bart. C.B. M.S. Consulting Surgeon at Guy's Hospital, London. Cloth. Price \$3. Pp. 478. New York: E. P. Dutton & Company, 1924.

Mr. J. Ellis Barker is a journalist who formerly wrote on foreign politics. He appears to have developed a sort of general asthenia due to malnutrition, constipation and lack of exercise. It occurred to him that he was in a state similar to that of a man about to develop cancer. He improved his health by studying food, eliminating constipation and building up good habits. By a strange system of *a priori* reasoning, therefore, he comes to the conclusion that he has prevented the occurrence of cancer in himself, and that his system will be suitable for preventing cancer in others. His thesis is presented in a large book with an introduction by Sir Arbuthnot Lane. This is especially interesting in view of the fact that a large part of the book is given over also to the presentation of the work of Sir Arbuthnot Lane in the diagnosis and treatment of intestinal stasis. Indeed, although the author cites and has evidently referred to a large amount of the literature of cancer, the outstanding names in his bibliography are those of Sir Arbuthnot Lane and Mr. Frederick L. Hoffman, the statistician. As a result of his considerations, Mr. Barker concludes that cancer may be prevented, if only persons will eat proper foods containing the correct vitamins, avoid constipation and take sufficient exercise. The results of this system of scientific analysis are at times ludicrous, since Mr. Barker is compelled to correlate certain facts in one case to certain conclusions, and the same facts in another case to an opposite conclusion. He neglects entirely in his studies of statistics to take into account the fact that the diagnosis of cancer during the last decade is a scientific matter with almost a perfect percentage of probability, whereas the diagnosis of cancer two generations ago

was subject to at least 50 per cent error. He neglects entirely researches that have been made both in Great Britain and in this country, which show that no vitamin of which we have knowledge at present has any direct influence on the cause of cancer. His analysis of statistics on heredity disregard the definite proofs submitted by such scientific workers as Maude Slye and pass instead to imaginative reasoning. He accepts a statement made by Sir Arbuthnot Lane that cancer never attacks a healthy organ, disregarding the fact that the cancer itself in the very earliest, perhaps unrecognizable, stage is itself a disease of the organ.

While Mr. Barker's view that cancer may be deterred by rational living is commendable since rational living may deter any disease, this is in no sense to be recommended as a suitable book for laymen interested in cancer. According to our present knowledge the proper advice for those interested in cancer is early diagnosis and surgical removal, except in such limited instances as those in which the use of radium or the roentgen ray seems desirable. A book such as this by Mr. Barker will, instead, incline the lay reader to believe that his cancer may be prevented or its growth deterred by eating proper vitamins or practicing good personal hygiene. There is not the slightest scientific evidence to warrant such a belief at the present time; this book can be considered only as a pernicious and harmful piece of literature.

HIGH BLOOD PRESSURE: ITS VARIATIONS AND CONTROL. A Manual for Practitioners. By J. F. Halls, Dally, M.A., M.D., B.C., Cantab. Physician to the Mount Vernon Hospital for Tuberculosis and Diseases of the Heart and Lungs. Cloth. Price \$3.25. Pp. 155 with 23 illustrations. New York: William Wood & Co., 1924.

Various methods of estimating the blood pressure are here considered with the conclusion that the combined auditory-tactile method should be employed as a routine. The author discusses the types of instruments now in use and then passes to the physiologic factors that cause and maintain blood pressure. An elevated diastolic pressure is considered of greater significance than an elevated systolic pressure. High blood pressure is not to be considered as a disease. The forms manifested by an abnormal increase in blood pressure are treated under simple hypertensia, the cardiovascular group and the renal group. The closing chapters include blood pressure in tuberculosis, blood pressure in relation to life insurance and the history of blood pressure estimation. The author concludes that inaccuracies in technique and inattention to diastolic and pulse pressures are responsible for failure to appreciate the importance of blood pressure estimations.

A WOMAN'S QUEST: The Life of Marie E. Zakrzewska, M.D. Edited by Agnes C. Victor, M.D. Cloth. Price \$3. Pp. 514 with 5 illustrations. New York: D. Appleton and Company, 1924.

Dr. Zakrzewska is pictured as a brilliant and energetic pioneer in the struggle to admit women to the study and practice of medicine. The story of her restless and uncompromising ambition, of her failures and successes of the ungallant reception of women into a profession that was laboriously outgrowing empiricism in its practices will be read with enthusiasm by the older school of women physicians. The more recent graduates of coeducational medical colleges will probably be unable to appreciate her struggles, and may even prove indifferent.

THE NATURE OF LOVE By Emmanuel Berl. Authorized translation by Fred Rothwell. Cloth. Price \$2. Pp. 278. New York: The Macmillan Company, 1924.

This volume analyzes a most interesting emotion in an endeavor to answer the question, 'Is there any difference between loving and believing that we love?' The author brings to this intricate analysis an immense armamentarium of quotations from philosophers and poets discarding the biologic explanation. He considers numerous sociological explanations, rejecting also the view that society can arouse this emotion. Finally, he finds it necessary to dispense with all principles of reason and arrives at the conclusion that love like thought, comes from God or from nowhere. The ultimate conclusion is that love is essentially an ecstasy similar to the pure religious ecstasy.

Medicolegal

Second Action Not Maintainable Against Physicians

(*Knowles v. Dark & Boswell (Ala.)* 99 So. R. 312)

The Supreme Court of Alabama says that the plaintiff brought this action against the defendants to recover damages for an alleged breach of an agreement between the parties, entered into, Aug. 9, 1920, under the terms of which the defendants were alleged to have agreed for a consideration to effect a cure of a disease from which the plaintiff was suffering. The defendants interposed a special plea to the effect that the plaintiff had theretofore filed a suit against these defendants, claiming damages for alleged malpractice (and a copy of that complaint disclosed a reference to this contract of employment), that subsequent to the bringing of this suit, namely, Sept. 24, 1921, these defendants paid this plaintiff \$2,000 in full settlement and compromise of any and all claims which he had against them or either of them on account of injury alleged by him to have been received during the months of August and September, 1920, by reason of any malpractice on the part of these defendants or either of them. It was then averred that the damages claimed in the present complaint, and for which these defendants paid the plaintiff \$2,000, were received under the contract of employment between him and these defendants entered into, Aug. 9, 1920, for the breach of which this action was brought. To this plea the plaintiff filed a demurrer, which the supreme court holds was properly overruled. The plea disclosed that for the alleged injuries received the plaintiff had a right to proceed against these defendants either in an action in tort or in action ex contractu (arising out of a contract) for the breach of an agreement, and that he elected to proceed in the tort action, and prosecuted it to satisfaction—receiving \$2,000, in full payment. It is well established that, when the same act constitutes both a breach of contract and a tort, the injured party may waive the contract and sue in tort and the same rule applies to waiver of the tort and a suit on the contract. The damages that the plaintiff received grew out of the contract, for a breach of which the present action was sought to be maintained. The plaintiff elected to pursue his remedy in a tort action and received his compensation under it. The same act constituted both a breach of the contract and a tort, and it would be manifestly unjust to permit the plaintiff thus to split up his cause of action to recover both in tort and under the contract. Happily, the justice of the case and the law are in accord.

Evidence and Petition in Action Against Surgeon

(*Martin v. Greer (Ga.)* 121 S. E. R. 688)

The Court of Appeals of Georgia, Division No. 2 in affirming a judgment on demurrer for the defendant, holds, according to a syllabus prepared by it, without any opinion or statement of facts, that a person professing to practice surgery or the administering of medicine for a compensation must bring to the exercise of his profession a reasonable degree of care and skill. In a suit for damages alleged to have been caused by the malpractice of a surgeon the burden is on the plaintiff to show a want of due care, skill or diligence, and also that the injury resulted from the want of such care, skill or diligence.

While it is true that in determining the question of reasonable care and skill the jury may consider the place of the operation, the circumstances surrounding it, the situation of the defendant with respect to the operation, and all the facts and circumstances which may be shown by the evidence, and which may throw light on the ultimate question, such is not the rule as to pleadings, and it is improper in a petition to set forth evidence instead of directly alleging an issuable fact, or to plead collateral evidential facts which the jury might perhaps believe pointed in the direction of the fact sought to be shown. Likewise, the inclusion in a petition, or attachment thereto as an exhibit, of a roentgen-ray photograph, designed to show the condition of an injured member from the alleged malpractice of a surgeon is subject to special demurrer. It is also true that allegations in a petition which do not state

issuable facts, but state mere conclusions relative to negligence, should be stricken out on timely special demurrer. Under the foregoing rulings, the special demurrers to the plaintiff's petition in this case were properly sustained.

In this case the petition as a whole failed to show any negligent exercise or failure to exercise any professional act or duty owed by the defendant as a surgeon, in sending the plaintiff to the city hospital, or any negligence chargeable to the defendant in the performance there by others of the operation in setting a broken leg, or in any subsequent treatment by the defendant. The allegations consisted largely of evidence, collateral or irrelevant matter, and conclusions of the pleader. The court did not err in sustaining a general demurrer.

Duty to Employee Taken Ill with Food Poisoning

(*Long v. Babcock Lumber & Boom Co. (W. Va.)*, 121 S. E. R. 494)

The Supreme Court of Appeals of West Virginia holds that where an employee of a lumber company while engaged at his work for the company was taken violently ill with food poisoning from the effects of which he died within a short time thereafter, this was not an injury received "in the course of and resulting from his employment," and was therefore not compensable under the workmen's compensation law of that state. The court says that the allegation was that the employee while actually at work for the defendant, was taken suddenly and violently ill, that the illness was food poisoning. This poisoning was not the result of anything done in connection with, or incident to the performance of, his work. He had evidently eaten something before he went to work which caused his illness.

But where a lumber company withholds from the wages of each of its employees a certain sum per month, in consideration of which it agrees to furnish medical attention and care and hospital service to its employees, this contract implies that in case of one of its employees, from whom it has withheld such sum, is taken violently and helplessly ill with food poisoning while at work in the woods for the company, the company shall procure for him medical aid and care, and convey him to a hospital within a reasonable time from the time the knowledge of such illness is brought home to the company.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Oto-Laryngology, Montreal, Canada, Sept. 15-20. Dr. Luther C. Peter, 1529 Spruce Street, Philadelphia, Secretary.
American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Cleveland, Sept. 18-20. Dr. James E. Davis, 111 Jefferson Avenue, Detroit, Secretary.
American Association of Railway Surgeons, Chicago, Oct. 15-17. Dr. Louis J. Mitchell, 29 East Madison Street, Chicago, Secretary.
American Child Health Association, Kansas City, Mo., Oct. 15-17. Dr. Philip Van Ingen, 125 East 71st Street, New York, Secretary.
American College of Surgeons, New York, Oct. 20-24. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director General.
American Electrotherapeutic Association, New York, Sept. 9-12. Dr. Richard Kovacs, 223 E. 68th Street, New York, Secretary.
American Public Health Association, Detroit, Oct. 20-23. Mr. Homer A. Calver, 370 Seventh Avenue, New York, Secretary.
Central States Pediatric Society, Rochester, Minneapolis, Oct. 30-31. Dr. H. T. Price, Westinghouse Building, Pittsburgh, Secretary.
Colorado State Medical Society, Denver, Oct. 7-9. Dr. F. B. Stephenson, Metropolitan Building, Denver, Secretary.
Delaware State Medical Society, Milford, Oct. 14-15. Dr. W. O. LaMotte, Industrial Trust Building, Wilmington, Secretary.
Indiana State Medical Association, Indianapolis, Sept. 24-26. Dr. Charles N. Combs, 221 South 6th Street, Terre Haute, Secretary.
Kentucky State Medical Association, Louisville, Sept. 23-25. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.
Medical Association of the Southwest, Kansas City, Mo., Oct. 13-18. Dr. E. H. Skinner, Rialto Building, Kansas City, Mo., Secretary.
Michigan State Medical Society, Mount Clemens, Sept. 9-11. Dr. F. C. Warnshuis, Powers Theatre Building, Grand Rapids, Secretary.
Minnesota State Medical Association, St. Cloud, Oct. 8-10. Dr. Carl B. Drake, Guardian Life Building, St. Paul, Secretary.
Missouri Valley Medical Society of the Des Moines, Sept. 17-19. Dr. Charles W. Fassett, 115 E. 31st Street, Kansas City, Mo., Secretary.
Nevada State Medical Association, Reno, Sept. 12-14. Dr. Claude E. Persall, Masonic Temple, Reno, Secretary.
North Dakota State Medical Association, Bismarck, Sept. 10-11. Dr. H. J. Rowe, 521 Upton Avenue S., Minneapolis, Minn., Secretary.
Pennsylvania Medical Society of the State of Reading, Oct. 6-9. Dr. W. T. Donaldson, Jenkins Arcade, Pittsburgh, Secretary.
Vermont State Medical Society, Burlington, Oct. 9-10. Dr. W. G. Ricker, St. Johnsbury, Secretary.
Virginia Medical Society of Staunton, Oct. 14-17. Miss Agnes V. Edwards, 104½ West Grace Street, Richmond, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to fellows of the Association and to individual subscribers to *THE JOURNAL* for a period of three days. No foreign journals are available prior to 1920 nor domestic prior to 1923. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

168 157 312 (Aug.) 1924

- *Use of Tryparsamide in Neurosyphilis W I Lorenz, A S Loevenhart
T F Reitz and C P Eck Madison Wis—p 157
- Coronary Sclerosis F A Willis and G E Brown Rochester, Minn—
p 165
- *Coronary Arterial Occlusion Definite Symptom Complex H C Gor-
dimer Troy N Y—p 181
- *Comparative Study in Digifolin Administration N F Clarke Detroit
—p 201
- *Effect on Blood of Irradiation Short Wave Length Roentgen Ray
G R Minot and R G Spurling Boston—p 215
- Primary Carcinoma of Liver B M Fried Boston—p 241
- Surgery of Pulmonary Tuberculosis J Alexander, Ann Arbor Mich
—p 268 To be Cont d

Tryparsamide in Neurosyphilis—Lorenz et al report their observations with tryparsamide in 185 cases of neurosyphilis. They found that tryparsamide and mercuric salicylate are therapeutically effective in early paresis meningoarteriosclerotic syphilis, and, to a lesser extent in taboparesis, tabes and in advanced paresis. The beneficial clinical results generally precede the improvement in the serology. Definite parietic psychoses disappear as the result of treatment. The mental restoration has persisted over a two year period. Visual disturbances occurred in 7 per cent of the total number of cases treated. In tabes and taboparesis 23 per cent of the cases showed visual disturbance. Of thirteen cases showing amblyopia during tryparsamide therapy all but one cleared up after withdrawal of the drug. Twelve of these cases were subsequently treated with tryparsamide without further eye disturbance.

Coronary Sclerosis—This study was undertaken by Willis and Brown for the purpose of determining the frequency of occult coronary disease, and to obtain data to coordinate clinical and necropsy findings. Eighty-six unselected, consecutive proved cases of coronary sclerosis were studied. The symptoms were arbitrarily classified as (1) typical angina pectoris, 21 cases, (2) atypical angina pectoris, 2 cases, (3) the syndrome of progressive myocardial failure unassociated with painful attacks, 22 cases, (4) the syndrome of progressive myocardial failure and typical angina pectoris 7 cases, and (5) the occult type of coronary sclerosis in which insufficient subjective or objective evidence of cardiac disease existed to permit its clinical identification, 34 cases. The aorta was found diseased in all but 1 case, it was syphilitic in 8 cases. There was aneurysm in 3 cases, in 2 cases involving the thoracic aorta, and in 1 case the abdominal aorta. The heart valves were diseased in 44 cases, and the pulmonary artery in 4 cases. In all cases there were degenerative myocardial changes. Associated disease of the pericardium occurred in 8 cases. Peripheral arteriosclerosis was noted in 60 cases renal arteriosclerosis in 32 cases and cerebral arteriosclerosis in 13 of the 15 brains examined. Forty-six patients had had varying degrees of nephritis. The gallbladder had been diseased in 22 cases. Twenty-seven patients had had hypertension, 14 had had hypotension. Sudden death occurred in 32 cases, in order of frequency in the clinical groups as follows: typical angina pectoris in 12 cases occult coronary type in 7 cases, angina pectoris with progressive myocardial failure type in 6 cases progressive myocardial failure type in 5 cases and atypical angina pectoris in 2 cases. Gradual cardiac failure occurred in 13 cases. The incidence according to clinical types was: (1) angina pectoris in 5 cases, (2) progressive myocardial failure type in 5 cases, (3) occult coronary disease in 2 cases, and (4) angina pectoris with progressive myocardial failure type in 1 case. Death following surgical operation resulted from various causes in 21 cases but in only 1 case was it attributable to cardiac disease. Death was due to other causes

in 22 cases. Twenty-five patients had had electrocardiographic examination, 17 of whom had revealed significant graphic abnormalities. These findings were: (1) significant T-wave negativity in isolated and combined derivations in 12 cases, (2) auricular fibrillation with significant T-wave negativity in 2 cases, (3) uncomplicated auricular fibrillation in 1 case, (4) auricular flutter in 1 case, and (5) ventricular tachycardia in 1 case.

Symptoms of Coronary Arterial Occlusion—Thirteen cases have been carefully studied by Gordimer and each one found to present the subjective symptoms and physical signs considered diagnostic of this clinical entity. Of the five fatal cases but one came to necropsy. This case showed a definite thrombosis of a large descending branch of the left coronary artery with a fresh cardiac infarct. The following is a summary of the salient features of this interesting symptom complex: (1) sudden severe anginoid pain substernal or upper abdominal, (2) a pinched ashen-gray or very pale facies often associated with the sensation of impending dissolution, (3) an acute emphysematous distention of the lungs with dyspnea or extreme orthopnea and moist crackling rales at the bases of the lung together with the evidences of the acute onset of cardiac decompensation, (4) an easily compressed, rapid thready pulse, which may present almost any form of arrhythmia, (5) a sudden dropping in the systolic pressure following the severe pain and early myocardial exhaustion, (6) a cardiac impulse, if palpable that is a diffuse feeble tap, distant heart sounds and often a tic-tac or gallop rhythm, (7) a localized pericardial friction rub which is evanescent, appearing as early as a few hours or a day or two after the sudden onset of the agonizing pain. It may be missed if the infarct involves the posterior aspect of the heart, (8) a fever of short duration and of a mild type associated with a polymorphonuclear leukocytosis. This does not occur in simple angina pectoris, (9) inversion of iso-electric position of the T-wave, with arborization block, (10) associated with the foregoing symptoms, the presence of a large tender liver, together with the symptoms and physical signs of pulmonary infarction, is suggestive of thrombosis of the right coronary artery or its branches, while the sudden onset of pulmonary edema or recurring attacks, together with the development of sudden arterial plugging of the vessels of the brain viscera or extremities, with the characteristic electrocardiogram is highly suggestive of a thrombosis of a branch of the left coronary artery.

Comparative Study in Digifolin Administration—It has been frequently noted that digitalis given intravenously acts more rapidly than when given by mouth. A comparison has been made by Clarke of different preparations given by different methods. In comparing the rapidity of action as measured by the slowing of the heart rate it was noted that an average slowing of the rate is obtained between three and four hours by intravenous at about four hours by intramuscular and at six hours by oral administration. The amount of digifolin required to show the earliest and full therapeutic effects is about equal for intravenous and intramuscular injection. By oral administration it required about half again as much of the drug. The average time required for digifolin to show the earliest and maximum effects with the three methods of administration has been obtained. The comparison of these time intervals closely approximates the comparison of the digifolin requirements. The use of digitalis by other than the oral method of administration is not advocated.

Effect of Irradiation on Blood—A study has been made by Minot and Spurling of the blood of forty-two cases, chiefly of cancer before and after fifty-six roentgen-ray irradiation treatments. Particular attention was given to the observations on twenty-two of the patients given thirty-six intensive short wave length treatments. The other irradiations were milder. Cases of disease of the hemopoietic tissue are not included. The most important effect of customary therapeutic doses of irradiation on the blood elements is to decrease the number of white cells especially lymphocytes so that leukopenia and lymphopenia may occur. When a customary therapeutic dose of short wave length roentgen rays is given, it

causes the white count to reach its lowest point about six days later, at that time leukopenia (a count below 5,000 per cubic centimeter) is more often present than not. A decrease below normal of the absolute numbers of bone-marrow white cells, which is indicative of marrow depression, is not unusual. The new short wave length roentgen-ray therapy, suitably given, produces no changes in the blood that are of a different character from those occurring after milder yet intensive irradiation. However, it does produce more rapid, marked and persistent changes than milder treatment, and if the treatment consists of merely moderate long wave exposures it may not even cause a decrease of white cells. An eosinophilia, often of 7 and as high as 23 per cent, is usual two or three weeks after short wave length irradiation. It appears to develop particularly following repeated exposures. After irradiation the blood contains many degenerated white cells, especially in the first three days. Some increase of immature white cells may be observed, especially at about the time the white count begins to rise, after large doses of irradiation. A slight increase of the platelets soon after irradiation is common. Important changes in the count of the red blood corpuscles and hemoglobin percentage do not occur as a result of mild or intensive therapeutic irradiation. Changes in the numbers of immature cells occur. The clinical condition of the patient will influence the degree and duration of the blood changes after irradiation, but anemia itself does not seem to be of any great importance. Much more important than the condition of the patient in determining the influence of irradiation on the blood is the size, intensity and character of the dose, larger doses producing greater blood changes than smaller ones.

Primary Carcinoma of Liver—Five cases of primary carcinoma of the liver are reported by Fried. Four cases are classified as cholangiomas, or bile duct carcinoma, and one is classified as hepatoma or liver cell carcinoma. In all five cases metastases were present in the lungs and in one case also in the kidney. Ascites was present in three cholangiomas and also in the hepatoma. The exact onset of the disease in the cases reported was impossible to determine, but the patient's attention was drawn to this condition two or three months before exitus. In no instance was the diagnosis of this condition made antemortem.

American Journal of Ophthalmology, Chicago

7 577 668 (Aug.) 1924

- Aneurysm of Intracranial Portion of Internal Carotid Artery D B Kirby New York—p 577
- Effect of Pin Hole Disc on Vision W M Bane Denver—p 582
- Use of Radium in Cataract A B McKee and W F Swett San Francisco—p 587
- Treatment of Carcinoma of Conjunctiva with Radium F M Johnson New York—p 589
- Projection of Retinal Excitations by Diffuse Light M Lindolt Paris, France—p 595
- Applications of Fundamental Mathematical Equation to Ocular Refraction and Ophthalmic Lenses C Sheard Rochester Minn—p 597
- Preglaucomatous Eye H S Grady Chicago—p 603
- Accommodation in Myopia H F Hansell Philadelphia—p 606
- Intracapsular Cataract Extraction Erisiphake A R Ubaldo and A S Fernando Manila P I—p 608
- Oculomotor Disturbances T Faith Chicago—p 610
- Case of Sarcoma of Eyelids J A Fisher Asbury Park, N J—p 619
- Embolism of Central Retinal Artery Paracentesis B W Key New York—p 620
- Type of Iridocyclitis R I Lloyd Brooklyn—p 621
- Cases of Focal Infection T H Odell Beverly Mass—p 622
- Modification of Calkins Muscle Folder for Strabismus J W Calkins, Oakland Calif—p 623

Annals of Surgery, Philadelphia

80 161 288 (Aug.) 1924

- *Induction of Splanchnic Analgesia G Labat New York—p 161
- *Sublingual Fibroma J J Morton New Haven Conn—p 187
- *Acute Pancreatitis C Eggers New York—p 193
- *Postoperative Stricture of Common Bile Duct E S Judd and V G Burden Rochester Minn—p 210
- *Arrested Development of Large Bowel R G LeConte W E Lee and T McK Downs Philadelphia—p 217
- *Hemorrhagic Ulcer of Meckel's Diverticulum R H Jackson, Madison, Wis—p 222
- *Herniotomy Utilizing Only White Fascia E Andrews Chicago—p 225
- *Position After Abdominal Hernia Operation L F Watson, Chicago—p 239
- Three Thousand Herniotomies B L Coley New York—p 242

- *Surgical Aspects of Xanthoma Tumors E M Miller, Chicago—p 256
- *Effect on Bleeding of Intramuscular Injection of Sodium Citrate S G Higgins and D Fisher Milwaukee—p 268
- Intracranial Arteriovenous Aneurysm C E Locke, Jr, Cleveland—p 272

Splanchnic Analgesia—The anesthesia problem is stated by Labat as follows. It cannot be proven by statistics that major abdominal operations performed under general narcosis are associated with greater dangers than when regional anesthesia is utilized, nor can it be statistically determined whether or not the induction of regional anesthesia involves greater risks than the administration of ether narcosis. It is a matter of opinion based on more or less justifiable attitudes and the personal equation of the operator plays a very important part in the achievement of the end-results. But it is well established that local anesthetics, when used judiciously limit their field of action to the anesthetized area and leave practically undisturbed the functional activities of the organs on which life chiefly depends. That post-operative disturbances, which are mostly postanesthetic, are considerably minimized, morbidity and mortality greatly reduced when regional anesthesia is the method employed, cannot be honestly denied. That there are cases in which general narcosis should absolutely be avoided is most certain, whatever be the attitude of the profession to the question of regional anesthesia or general narcosis in abdominal surgery. It is chiefly on behalf of the bad risk patients that splanchnic analgesia has been devised. Of the three original methods Wendlings is not recommended by Labat. Brauns method has a few partisans. Kappis' method enjoys the favor of the majority of writers and certainly has the greatest practical value. Best results are obtained when the solution is deposited between the semilunar ganglia and the renal plexicles. Variations exist in the inclination of the twelfth rib on the vertical column which are responsible for a certain number of failures. These failures can be reduced to a minimum by applying the coefficient of correction of the costovertebral angle that is puncturing on the lower border of the twelfth rib opposite the upper extremity of the first lumbar spinous process. It is perfectly safe to approach the splanchnic plexus from the back. By keeping close contact with the vertebral column and following the technic described for that route it is impossible to make an intraspinal or an intravenous injection. Splanchnic analgesia has a very great field. There seems to be no contraindication to its use. It need only be applied judiciously by those already familiar with the regional method.

Sublingual Fibroma—A chronic swelling involving the posterior sublingual region in a middle aged man was treated by Morton for about one year by radiotherapy without apparent effect. The growth was then removed through a submental incision and microscopic examination showed it to be a fibroma. The growth measured 7.5 by 7 by 5 cm and weighed 170 gm. No similar case has been found in the literature.

Acute Pancreatitis—Eggers reports six cases of acute pancreatitis which seem to support the theory that infection as such has nothing or little to do with the condition, but that it is due to the action of liberated pancreatic ferments on the surrounding tissue.

Postoperative Stricture of Common Bile Duct—Judd and Burden report ten cases. Postoperative stricture of the common duct is usually the result of operative trauma. It may also follow localized infection or necrosis of the wall of the duct. The symptoms may be those of permanent or intermittent biliary obstruction, and often suggest stone in the common duct. The patients are very ill and are grave surgical risks because of jaundice, cholangitis and impaired liver function. The site of the stricture is usually at the juncture of the cystic and common ducts. Operation should provide biliary drainage and restoration of the normal course of the bile. Results of operation are fairly satisfactory, considering the hazard and technical difficulty, and the otherwise almost hopeless nature of the condition.

Arrested Development of Large Bowel—LeConte, Lee and Downs report a case of early arrest of development of the colon. Superimposed on a simple malformation were the

sequelae of a former peritonitis, which kinked and bound the colon together in such a way as to result in chronic obstruction of mild degree. Associated whether coincidentally or etiologically could not be determined, was a condition of exophthalmic goiter and of manic depressive psychosis. The embryology of the alimentary canal is discussed in explanation of the condition found.

Hemorrhagic Ulcer of Diverticulum—Jackson cites a case in which there were repeated attacks of severe intestinal hemorrhage due to an ulcer of Meckel's diverticulum. No other case is said to be on record.

Herniotomy—The importance of the endo abdominal fascia is emphasized by Andrews. Considerable evidence is presented that the use of the internal oblique is not only futile but also probably actually harmful. An operation is described in which the restoration of the canal is made using only white fascia. The floor consists of the endo-abdominal fascia plus the external oblique. The roof of the left-over lower fragment of the external oblique aponeurosis is overlapped or imbricated in front of the cord.

Jack-Knife Position After Herniotomy—Watson recommends that the jack-knife position—elevation of the shoulders and knees—be maintained for from five to ten days after operation and is usually to be advised for all patients following operation for inguinal, femoral, umbilical and ventral hernia.

Xanthoma—Three cases are reported by Miller. In one case the tumor was situated on the dorsum of the foot, in the second case the right breast was the seat of the tumor and in the third case there were multiple myelomas involving the bones of the cranium, vertebrae and extremities. For the purpose of microscopic study a piece of tissue was removed from a lesion in the shaft of the humerus. The predominating types of cells were the plasma cells and myelocytes, but in addition there were areas near the cortical bone in which large multinuclear foreign body giant cells were seen and in a few places the typical foam cells characteristic of xanthoma tissue were present.

Intramuscular Injection of Sodium Citrate Hastens Blood Coagulation—Higgins and Fisher inject 15 c.c. of a 30 per cent chemically pure sodium citrate solution into each buttock, preceded by the injection of procain. This method is apparently free from danger, no untoward results having been noted in over fifty cases. It causes a prompt reduction of the coagulation time of a duration of one to three hours with a gradual return to normal within twenty-four to forty-eight hours.

Archives of Dermatology and Syphilology, Chicago

10 139 274 (Aug.) 1924

*Pigmentation of Skin Associated with Lymphosarcoma. A. S. Warthin. Ann Arbor Mich. A. W. Crane and J. B. Jackson. Kalamazoo Mich. —p. 139

*Osteosis Cutis. S. W. Becker. Rochester, Minn. —p. 163
Multiple Cutaneous Leiomyomas of Skin. M. Scholtz. Los Angeles —p. 173

*Onychiauxis in a Eunuchoid. H. Lissner. San Francisco —p. 180
Mycosis Fungoides. Three Cases of Tumor D'Emblee Type. E. A. Oliver. Chicago —p. 183

Antigen for Precipitation Test with Syphilitic Serums. O. Ishii. New York —p. 205
Asymptomatic Neurosyphilis Developing During Systematic Treatment. L. W. Shaffer. Rochester, Minn. —p. 209

Pigmentation of Skin with Lymphosarcoma—The case studied by Warthin et al. was one of Addison's disease, due to pressure atrophy of the chromaffinic tissues of the abdominal sympathetic and suprarenals produced by a generalized aleukemic lymphoblastoma primary in the retroperitoneal nodes.

Osteitis Cutis—A case is reported by Becker of a hard, resilient plaque, containing osseous tissue, in the scalp of a woman, aged 32. The duration of the lesion was fourteen years, during which time mechanical irritation had caused repeated ulceration and crusting and bodies "like bone" had been removed. There was no history of previous trauma. The overlying skin was cicatricial with follicular atrophy, there being about half the normal amount of hair on the area. Microscopic study revealed islands of true bone, having

lamellar configuration, a periosteum or pseudoperiosteum marrow cavities with endosteum and lacunae and canaliculae. No other calcified tissue and no cartilage were seen. The occurrence of concomitant hypertrichosis, a keratotic nevus of the sole and a nevus pigmentosus of the finger, suggests that the osteosis may have been a nevus formation, due to fetal inclusion or a phylogenetic atavism.

Onychiauxis in Eunuchoid—The case reported by Lissner concerns a young man who suffered unmistakably from eunuchoidism, due to trauma and subsequent sloughing and atrophy of the testicles. He presented obvious onychiauxis of finger and toe nails. The condition disappeared by supplementing the gonad deficiency with subcutaneous implantations into the abdominal wall of fresh unextracted, untreated ram's testicular substance.

Mycosis Fungoides—Three cases of mycosis fungoides showing atypical features are reported by Oliver. All three cases showed a limitation of the disease to the legs. In none of them were there any signs of a premycotic stage. The pathologic findings in all of them agree with the pathologic findings previously reported as pathognomonic for the disease. All three patients died.

Atlantic Medical Journal, Harrisburg, Pa

27 691 778 (Aug.) 1924

Surgical Treatment of Complete Uterine Prolapse. B. C. Hirst. Philadelphia —p. 691

Relative Values of Irradiation and Radical Hysterectomy for Cancer of Cervix. J. G. Clark and F. B. Block. Philadelphia —p. 696

Focal Infection as Danger to Pregnant Woman. J. L. Gilmore. Pittsburgh —p. 699

Pediatric and Congenital Syphilis. R. S. Haynes. New York —p. 702

Mechanism of Infection and Immunity in Congenital Syphilis. J. A. Kolmer. Philadelphia —p. 707

Intradermal Vaccination. D. E. Berney. Scranton Pa. —p. 713

Insulin and Diet in Diabetes. O. H. Petty. Philadelphia —p. 717

Surgery Under Pennsylvania Compensation Law. L. F. Stewart. Clearfield Pa. —p. 722

Importance of Foci of Infection in Mouth from Dentist's Viewpoint. L. W. Oehl. Pittsburgh —p. 726

*Nervous Indigestion. J. Q. Thomas. Norristown Pa. —p. 728

*Migraine Paralytic Manifestations. G. J. Wright. Pittsburgh —p. 737

Nervous Indigestion—Thomas cites a considerable number of cases in which chronic indigestion of varying degree was the chief symptom of a condition that later became exceedingly serious as gastric and duodenal ulcer, splanchnoptosis, cancer of the stomach and of the esophagus, gastric achylia, gallbladder disease, incipient tuberculosis, tabes, heart disease or myocardial insufficiency, angina pectoris, Addison's disease and chronic appendicitis.

Paralytic Manifestations of Migraine—Wright says that whatever may be the first cause of migraine, the chief effects are experienced by the sympathetics and the vascular system as a result of which more or less localized cerebral vasomotor spasms occur. Such a view will allow one to interpret the unusual and atypical cases particularly the paralytic, aphasic and hemianopic phenomena. Fortunately migraine is in the vast majority of instances a benign affection, and yet the literature furnishes many examples of permanent sequelae both motor and sensory. Migraine practically always disappears after 50, but in cases in which it continues into the degenerative period of life and in any case at any age in which there is vascular disease, attacks of migraine are not free from danger.

Boston Medical and Surgical Journal

191 239 282 (Aug.) 1924

Surgical Treatment of Chronic Ulcer of Stomach and Duodenum. T. D. Lund. Boston —p. 239

Heliotherapy. R. P. Schwartz. Perryburg N. Y. —p. 243

*Prevention of Tuberculosis. W. P. Buffum Jr. Providence R. I. —p. 249

Evolution of Juvenile Tuberculosis. H. D. Chadwick. Westfield Mass. —p. 252

Ocular Facts for General Practitioner. H. Lowell —p. 254

Tuberculosis Preventorium—The preventorium idea is based on the assumption that a considerable percentage of the cases of adult tuberculosis is due to the juvenile type of infection, which has been latent in childhood and later, in the adult, spread and caused the pulmonary type of the disease.

It is the opinion of the majority of tuberculosis experts that this extension is the cause of the greater part of adult tuberculosis, and that fresh infection occurring during adult life is a less common occurrence. The preventorium is planned to take children who are supposedly infected with tuberculosis, and whose general physical condition and nutrition cannot be kept in a satisfactory state at home. By improving their physical condition it is hoped to lessen their liability to adult tuberculosis. Buffum describes briefly the Lakeside Preventorium at Hoxie, which is financed and managed by the Providence Tuberculosis League, founded in 1912.

California and Western Medicine, San Francisco

22 365 422 (Aug.) 1924

- Preliminary Thyroid Operations H. K. Bonn Los Angeles—p. 365
Health Conditions in Nevada C. P. Knight—p. 368
Undescended Testicle Complicating Acute Appendicitis M. L. Herzig, Seattle—p. 371
Chronic Ethmoidal Conditions H. McNaught, San Francisco—p. 373
Industrial Surgery as Specialty A. W. Moore Los Angeles—p. 375
Artificial Pneumothorax vs. Rest in Pulmonary Tuberculosis P. K. Brown San Francisco—p. 380
*Three Hundred Cases of Pulmonary Tuberculosis Treated with Partial Antigens M. Rothschild and H. Warren Belmont Calif.—p. 381
Bad Risk and Surgeon R. Smith Los Angeles—p. 382

Cryptorchidism Complicates Appendicitis—Herzig cites a case of bilateral cryptorchidism with retention of the right testis in the inguinal canal, in which there was also present an acute appendicitis. The symptoms were not typical of appendicitis, and attention was focused on the testicular condition. Operation disclosed a ruptured gangrenous appendix, surrounded by a well organized network of adhesions, with a small quantity of pus present on opening the abdomen. Removal of appendix and drainage was followed by prompt recovery.

Partial Antigens in Treatment of Tuberculosis—The partial antigens have given Rothschild and Warren better results than any other toxin free tuberculins. They have used them for three years, and with each year their results have become better, a fact said to be due to a modification in treatment. They have not strictly followed the directions of Much and Deycke, but have used the partial antigens strictly intracutaneously as Sahli, in Switzerland, has recommended for the Beraneck serum. Also they have, especially in the more advanced cases, confined themselves to extremely small dosages, in longer intervals, increasing the doses only when considered justifiable.

Canadian Medical Association Journal, Toronto

14 671 778 (Aug.) 1924

- *Clinical and Laboratory Methods of Diagnosis J. Halpenny—p. 671
Tuberculosis of Larynx R. S. Pentecost—p. 674
Roentgen Ray Sickness and Chlorid Retention A. T. Cameron and J. C. McMillan—p. 679
Anatomic Points Relative to Infections of Hand I. M. Thompson—p. 683
Conservation in Treatment of Hand Injuries T. C. Hamilton—p. 686
*Epidemic of Virulent Smallpox in Windsor F. Adams—p. 692
Prophylaxis in Obstetrics L. Arthur—p. 697
Treatment of Abortion H. C. Burgess—p. 701
Anesthesia in Obstetrics W. Bourne—p. 702
*Conclusions After Symposium on Obstetrics W. W. Chipman—p. 704
Intracardiac Adrenalin in Asphyxia Neonatorum W. F. Abbott—p. 706
Modern Tendencies in Infant Feeding A. Goldbloom—p. 709
Acid Milk Mixtures in Infant Feeding P. R. Struthers—p. 713
Factors in Diagnosis of Syphilis J. H. Stokes and H. A. Des Brisay—p. 715
Tryparsamide in Neurosyphilis N. Viner—p. 719
Management of Neurosyphilis G. O. Scott and G. H. J. Pearson—p. 724
Silhouette Radiograph in Clinical Diagnosis A. P. Bertwistle—p. 731
Fatal Case of Diabetes Mellitus Complicated by Infection E. S. Mills—p. 732
Case of Cerebral Tumor C. K. P. Henry and L. J. Rhea—p. 734
*Rupture of Right Rectus Simulating Appendicitis R. I. Harris—p. 739
Rat Bite Fever H. L. Reddy—p. 741

Methods of Diagnosis—Halpenny says The laboratory is of inestimable assistance in making a diagnosis in some cases. He would be a rash clinician who would, in this day of enlightenment, refuse to avail himself of the assistance of the laboratory. But many cases can be determined quite without this aid. The great danger is that the rising generation of physicians will cease to try to acquire the full development

possible for all the human senses. The laboratory must forever remain an assistant to the clinician, not the clinician an assistant to the laboratory.

Vaccination Protects Against Smallpox—In this epidemic no one vaccinated successfully within twelve years contracted smallpox. No one vaccinated successfully, no matter how long before, died of the disease. Of the cases in persons who had never been successfully vaccinated, 71 per cent died. Vaccination of almost the whole population stopped the epidemic abruptly and completely.

Discussion on Labor—A review of 1,733 cases of labor by Chipman leads him to conclude that labor is a physiologic process if the woman is but let alone. The ideal labor, the one safest for the mother and child, remains still the labor that is spontaneous. Hence the routine abrogation of the second stage by version and extraction, or by the use of so called prophylactic forceps, the "vicarious labor" of the obstetrician is a practice unsafe and to be condemned. In the 1,733 cases only seven mothers died, a mortality rate of 0.4 per cent. Two died from sepsis, three from toxemia (the eclamptic type) and one from hemorrhage in a placenta praevia. One woman succumbed to pernicious vomiting when she was four and one half months pregnant. Chipman says that a woman who has suffered in one pregnancy from an eclampsia, should, in any subsequent pregnancy spend the first trimester largely in bed and this irrespective of all chemical findings, or nonfindings, in the urine or blood. There were seventeen cases of placenta praevia and three of these were central. One mother and four of the children succumbed. These cases were characterized by the onset of painless uterine hemorrhage during the first trimester, hence Chipman says. Given such a uterine hemorrhage, and the diagnosis of placenta praevia made either central or marginal, the sooner delivery is effected the better. In the treatment of toxic cases 200 cc. of a 20 per cent glucose solution may be given intravenously, two or even three times in the twenty-four hours, often with marked benefit.

Rupture of Rectus Abdominis—In Harris' case there was a rupture of the right rectus in its lower third, which occurred during an attack of influenza in which coughing was the principal symptom.

Colorado Medicine, Denver

21 219 248 (Aug.) 1924

- What Practitioner Should Expect in Roentgen Ray Diagnosis F. B. Stephenson Denver—p. 222
*Fluoroscope in Examination of Heart Original Orthodiascope C. T. Burnett Denver—p. 228
Psychic Factor in Health and Disease A. C. McClanahan Delta—p. 232
Bacterial Nature of Mitochondria I. E. Willin Boulder—p. 236
Hawaiian Islands H. G. Wetherill Denver—p. 241

Fluoroscopic Examination of Heart—Burnett asserts that physical methods of examination in the demonstration of aortitis, dilatation and aneurysm of the aorta have all proven undependable, while aortic thickening (increased density) and the pulsations of dilatation and aneurysm are demonstrated fluoroscopically with the greatest of ease. All factors influenced by motion as presented in all the various positions of the heart or of any of its chambers or appendages are exhibited in a manner which furnishes a mental picture far more valuable than an instantaneous record of one fraction of the cycle. Sometimes in interoposterior exposure shows a very slight or no deviation from the normal but an oblique view discloses an increased density, enlargement or pulsation not previously noted. A point not to be overlooked is that this procedure permits the internist to perform this part of the examination along with the routine examination, thus insuring a correlation of the various findings.

Journal of Experimental Medicine, Baltimore

40 151 279 (Aug.) 1924

- Lead Studies J. C. Aub, P. Reznikoff and D. E. Smith Boston
III Effects of Lead on Red Blood Cells 1 Changes in Hemolysis—p. 151
*III 2 Surface Phenomena and Their Physiologic Explanation—p. 173
*Id III 3 Chemical Explanation J. C. Aub and P. Reznikoff Boston—p. 189

- *Diet and Tissue Growth II Regeneration of Liver Tissue During Nutrition on Inadequate Diets and Fasting A H Smith and T S Moise New Haven Conn.—p 209
- Cultural Characters of *Bacillus Abortus* T Smith Princeton N J—p 219
- Testing Enzymes of Living Hemolytic Streptococci I Lipase W P Thompson and F L Meloney Peking China—p 213
- Biology of Streptococcus III Agglutination and Absorption of Agglutinin with Streptococcus Scirrhinae F A Stevens and A R Doch z New York—p 251
- Inhibitory Effect of Acidin on Sporogony of Coccidium P A Lewis Princeton N J—p 263
- Methemoglobin Formation by Sterile Culture Filtrates of Pneumococcus H J Morgan and J M Neill New York—p 269

Effect of Lead on Erythrocytes—According to Aub et al the effects of lead on red blood cells are manifested by shrinkage, inability to expand, increased brittleness and loss of the normal consistency which makes their surface sticky. After exposure to lead, red blood corpuscles are more like hard, melastic, brittle rubber balls than like the soft, elastic, resilient cells characteristic of normal blood.

Cause of "Leaded" Erythrocyte—Aub and Reznikoff assert that the chemical reaction which causes the physical changes in the red blood cell in cases of lead poisoning is a precipitation of insoluble lead phosphate and a formation of acid. This causes the "leaded" red blood cell to change from an elastic distensible sac to one which is contracted relatively inelastic and brittle. In such condition the cell can poorly withstand the trauma involved in circulation of the blood, and this lack of resistance probably explains the marked destruction of peripheral blood in lead poisoning.

Diet and Tissue Growth—The results of the experiments made by Smith and Moise indicate that the requirement for the essential amino acids for growth of individual organs of the body is less than that for correlated growth of the whole body.

Journal of Industrial Hygiene, Boston

6 125 168 (Aug) 1924

- Lead Studies V A S Minot Boston
- *A Distribution of Lead in Organism After Absorption by Gastrointestinal Tract—p 125
- B Distribution of Lead in Organism After Absorption by Lungs and Subcutaneous Tissue—p 137
- *Distribution of Lead in Human Organism A S Minot and J C Aub Boston—p 149
- Lead Studies V Deposition of Lead Salts Solubilities of Di Lead Phosphate in Water and of Di Lead and Tri Lead Phosphates in Lactic Acid L T Fairhall and C P Shaw Boston—p 159

Distribution of Absorbed Lead in Organism—Minot asserts that lead even in solution, when administered by mouth, is absorbed into the general circulation only in small amounts. The liver serves as an effective protector for the rest of the organism by removing from the portal circulation and excreting in the bile much of the lead absorbed from the gastrointestinal tract. A small amount of lead reaches the general circulation and is distributed to the various tissues of the body. The bones show especial affinity for the lead in the blood stream and retain it. The concentration of lead in the other tissues does not increase as absorption continues. These two facts cause the relative as well as the absolute amount of lead in the skeleton to increase. If absorption ceases and the subject returns to normal conditions, practically all the lead in the body becomes localized in the skeleton, where it is held as a temporarily harmless deposit. The harm done by lead apparently occurs during the process of transportation rather than during storage in the body.

Id—In actual cases of chronic plumbism in man, events have been seen to run the same course as in experimental animals. While symptoms of plumbism are present as a result either of absorption of lead from external sources or a mobilization of a skeletal store lead is distributed generally throughout the organism. After exposure has ceased and lead is no longer entering the circulation there is almost complete selective localization of lead in a temporarily harmless skeletal deposit. The medicolegal importance of these data is discussed.

Journal of Infectious Diseases, Chicago

35 105 212 (Aug) 1924

- Hydrogen Ion Concentrations for *Bacillus Botulinus* and Quantitative Estimation of Growth XVI C C Dozier San Francisco—p 105

- *Influence of Sugars and Salt on *Bacillus Botulinus* XVII C C Dozier San Francisco—p 134
- *Resistance of Spores of *Bacillus Botulinus* to Disinfectants XVIII C C Dozier San Francisco—p 156
- *Bacteriologic Study of Middle Ear Infections E Valentine San Francisco—p 177
- *Occurrence of *Bacillus Botulinus* in Human and Animal Excreta XXI E J Easton and K F Meyer San Francisco—p 207

Botulinus Toxin Produced by Enzyme—The evidence presented by Dozier seems to suggest that toxin production by *Bacillus botulinus* is a function of enzyme action, and the bacterial cell is probably the matrix of the poison.

Resistance of Botulinus Spores to Disinfectants—Dozier asserts that 10 per cent hydrochloric acid at room temperature may be depended on to destroy all *Bacillus botulinus* spores within an hour. If a longer time can be allowed for sterilization, liquor formaldehydi diluted once with warm water acting over a period of at least twenty-four hours is recommended. It is quite probable that such a solution held at from 60 to 70 C for a shorter time would be as efficient.

Bacteriology of Middle Ear Infections—Valentine found that the beta hemolytic streptococcus is probably the most important etiologic organism in the majority of acute middle ear infections in San Francisco. In a small percentage of cases staphylococci, pneumococci, green (alpha) streptococci and diphtheroid bacilli predominate. The organisms obtained from twelve chronic cases, in pure or mixed culture included diphtheroid bacilli, staphylococci, *Bacillus pyocyaneus* *B proteus* and *B coli*. A study of the throat flora in relation to the bacteria found in the ear discharges of acute middle ear infections revealed that in cases in which the beta hemolytic streptococcus, pneumococcus or green (alpha) streptococcus are the apparent exciting factors in the ear discharge, the same bacterial species are found in the throat. In nineteen out of twenty-two cases of bilateral otitis media involved at approximately the same time, the same bacterial species was obtained in the primary culture from both ears in each individual. The strains of beta hemolytic streptococcus from 53 primary ear discharges fall into the following fermentative groups: pyogenes, 45, or 85 per cent, infrequens, 5, or 9.4 per cent, equi 3, or 5.6 per cent. In the cases studied over a considerable period of time, diphtheroid bacilli and staphylococci have been found to be the most frequent secondary invaders in the ear discharge after the acute stage of the infection. There is some indication that in certain cases these bacterial varieties may be factors responsible for the chronicity of the inflammatory process.

Excreta Do Not Contain Bacillus Botulinus—Easton and Meyer failed to find *Bacillus botulinus* in the stools of eighty-eight healthy persons, although it was known that the spores were being ingested on raw fruits and vegetables which served as food. Three hogs and two cattle specimens, or five out of fifty samples of animal excreta collected in widely separated areas of California from hogs, cattle, horses, sheep and chickens, contained *B botulinus* Type A. The evidence secured from an examination of ninety-five manure specimens strongly indicates that animal excreta contributes relatively little to the pollution of the soil with *B botulinus*.

Nebraska State Medical Journal, Norfolk

9 289 332 (Aug) 1924

- Hemorrhages of Pregnant Uterus P Findley Omaha—p 289
- Blood Chemistry as Aid to General Practitioner R W Webster Chicago—p 295
- Biologic Action of Roentgen Ray E W Rowe Lincoln—p 303
- *Esophageal Diverticula W J Arrasmith Grand Island—p 307
- Anorectal Complaint L E Moon Omaha—p 311
- Gonorrhea P H Bartholomew Lincoln—p 315
- The Ulcer Problem F Conlin Omaha—p 318
- Adolescence Glaucoma D D Sanderson Lincoln—p 322
- Multiple Pregnancy Sixteen Cases A A Bald Platte Center—p 324

Esophageal Diverticulum—Arrasmith's case was one of diverticulum at the esophagopharyngeal junction in a man aged 66. For ten years the chief complaint was that he "spit back" food and liquids. Finally the condition became so bad that he could not satisfy his appetite and as a consequence there was a gradual loss in weight. The diverticulum was cut off in a two stage operation. The man is now entirely well.

FOREIGN

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British Medical Journal, London

2 41 88 (July 12) 1924

Cocain Butyn Tutocain and Other Local Anesthetics A J Copeland —p 41

*Caesarean Section F F Murray —p 44

*Bacteriophage in Treatment of Typhoid J Smith —p 47

*Precipitation of Crisis in Treatment of Pneumonia F M Gardner Medwin —p 49

Blood Infection of Submaxillary Gland W Mercer —p 51

Amidopyrin in Treatment of Mersles M Loewenthal —p 51

Return of Pulsation in Thrombo-Angitis Obliterans F P Weber —p 52

Case of Onychogriphosis W G Nash —p 52

Strangulated Hernia in Infant F A H Simmonds —p 52

Local Anesthetics—Copeland's experiments show that the best of the local anesthetics for the eye are cocain and butyn. Tutocain may also have a use. Tropacocain, novocain and eucain are less valuable for deep anesthesia. For the nose, cocain and tutocain are alone useful. For subcutaneous injection, novocain is much the best. Besides cocain, it is believed that the properties of butyn and tutocain may render them addiction drugs.

Caesarean Section—Murray records an experience of 116 sections, the majority of which were performed to anticipate or relieve obstructed labor due to pelvic contraction and others for less common indications. Forty-three women operated on by Murray early in labor with unruptured or recently ruptured membranes all lived as did also their babies. Of the 116 cases with the exception of two deaths under anesthesia, the women who died were all very exhausted and definitely infected. Ten mothers and fourteen infants died. The mothers of eight of these babies lived.

Bacteriophage for Typhoid—The bacteriophage employed by Smith in the treatment of seven cases of typhoid was isolated from the feces of a normal person who never had an intestinal infection. It was obtained by the technique devised by d'Herelle. In five cases there occurred an immediate lysis after the administration of bacteriophage. In the two remaining cases, in which the blood culture showed the presence of *Bacillus typhosus*, the bacteriophage had apparently no effect in modifying the course of the disease. The strains of *B. typhosus* obtained from the blood from the urine, and from the feces of the various patients were equally susceptible to the bacteriophage *in vitro*.

Precipitating Crisis in Pneumonia—Gardner-Medwin formulates the following conclusion: Pneumonia is the result of lowered resistance. Lowered resistance is coincident with, if not caused by, leukopenia. Leukopenia is the result of a toxin which temporarily paralyzes the power of the system to respond to the chemotactic call of bacterial invasion. Sodium nucleinate injected intramuscularly has the power to overcome this disability and to call out the reserves of leukocytes stored in the marrow, converting the leukopenia into a leukocytosis, thereby precipitating the devolution of the disease. The effect of sodium nucleinate is independent of the duration of the illness, provided the patient is not in a dying condition before it is administered. The action of this remedy is greatly facilitated by intensive alkalization of the system by the administration of large doses of sodium bicarbonate. Lobar pneumonia reacts more typically and satisfactorily than does bronchopneumonia.

Blood-Borne Infection of Submaxillary—Mercer reports a case of blood-borne infection of the salivary glands supervening on a duct obstruction inflammation. An elbow wound was the source of the infection. On sectioning the gland, a small calculus, about the size of a pea, was found embedded in a part of the gland which had become much fibrosed.

2 89 136 (July 19) 1924

Influence of Radiology on Conceptions of Disease T Horder —p 89

*Cancer of Cervix S Forsdike —p 94

*Hernia into Inferior Duodenal Fossa J J Levin —p 98

Treatment of Hemorrhoids by Submucous Injections of Chemicals H G Anderson —p 100

*Attempt to Vaccinate Children Against Tuberculosis N Raw —p 102

Partial Heart Block Complicating Aortic Incompetence H C Nyon —p 103

Knock Knee and Scoliosis A H Shennan —p 103

Ascariis Lumbricoides from Herniotomy Wound Q Stewart —p 103

Surgical Ephysema Due to Parturition A W Hansell —p 104

Edema of Larynx from Potassium Iodid G A G Simpson —p 104

Rupture of Aortic Aneurysm in Young Woman R Mackinnon —p 104

Uncommon Form of Dislocation of Patella F G Kennedy —p 104

Treatment of Cancer of Cervix—In Forsdike's opinion, for cases of carcinoma clinically limited to the cervix the only treatment is operation. For cases which have clinically invaded the pericervical tissues the treatment is by radium to the cervix and roentgen rays to the pelvic tissues. Salts of copper play an important though subsidiary part in treatment by radium. Preoperative and postoperative irradiation is of considerable value.

Hernia into Inferior Duodenal Fossa—Levin submits a case which he believes is further proof that this type of hernia is congenital in origin.

Vaccination Against Tuberculosis—Raw's experiments tend to show that it is possible to immunize animals against tuberculosis by means of a protective vaccine prepared from attenuated bacilli. The duration of the immunity is not yet known. It seems to be probable that children may be protected against infection in the household. All children over the age of 1 year who are living in the same house with a tuberculous member of the family ought to be protected against infection, and it is in the early years of life that such infection usually occurs. Raw has treated 412 children, varying in age from 1½ to 14 years, one of whose parents was suffering from pulmonary tuberculosis with two prophylactic doses of a vaccine prepared from dead cultures of attenuated bovine bacilli. The injections were given at an interval of two weeks. No reactions were observed and in no case has there been any untoward symptom. All the children were treated at the request of a parent. Up to the present no child has developed tuberculosis.

Lancet, London

~ 101 150 (July 19) 1924

Chronic Diarrhea J A Ryle —p 101

*Venous Pressure in Normal Persons D I Bedford and S Wright —p 106

Inoculation of Heterologous Antigens A B Rosher —p 110

Glandular Activity in Human Tetus M I I Keene and I I Hewer —p 111

Congenital Occlusion of Common Hepatic Duct W M Feldman —p 113

Case of Actinomycosis A I G McLaughlin and D S Page —p 114

Pancreas of Teleostean Fishes as Source of Insulin S Vincent E C

Dodds and F Dickens —p 115

Incidence of Heart Lesions (40 Per Cent) in Infective Arthritis

T W Iroggatt —p 116

Torsion of Omentum Simulating Appendix Abscess M W Bulman —p 116

Venous Pressure in Normal Persons—The pressure in the arm veins in normal persons has been investigated by Bedford and Wright by Claude's manometer according to the technique of Villaret, St. Girons and Grellety-Bosviel. With the subject recumbent and the arm horizontal the readings obtained were between 5 and 15 cm. water in 90 per cent of cases. Less constant results were obtained than those recorded by other workers with this method. This method involves errors which probably render the lower readings unreliable, but should prove sufficiently accurate for detecting pathologic increases in venous pressure. No reading under 15 cm. water obtained by this method should be regarded as pathologic. More accurate determination of low venous pressure is possible if the author's modification is employed. The factors responsible for the normal peripheral venous pressure are discussed.

Inoculation of Heterologous Antigens—Various non-specific antigens were used by Rosher in an attempt to influence a steady agglutination titer in rabbits. The only instance in which the titer was appreciably affected was when the non-specific antigen bore close serologic relationship to the specific one. Steady agglutination titer remained unaffected by severe constitutional disturbances occurring as the result of infections artificially produced. These results are evidence in support of the reliability of the repeated agglutination method as a means of diagnosis of enteric fever in the inoculated subject.

Glandular Activity in Human Fetus—According to Keene and Hewer the fetal kidney begins to function at about the eleventh week of development. The fetal liver is functioning as an excretory organ at 12 weeks. The fetal gastric mucosa contains pepsin at 16 weeks, but no hydrochloric acid even at full term. The fetal pancreas contains both trypsin and trypsinogen at 16 weeks, both are also present at full term. Pancreatic amylase is present at 24 weeks, and pancreatic lipase at 32 weeks. Intestinal ferments are not present at 32 weeks, but enterokinase is present at 8 weeks. The fetal pituitary contains an active principle at 8 weeks. The fetal thyroid is producing colloid-like secretion at 11 weeks. The fetal suprarenal contains adrenin at 16 weeks, but does not give a chromophil reaction until very much later.

Congenital Occlusion of Common Bile Duct—Feldman's patient was a twin baby, aged 8 weeks. It was quite clear from the history, the choluria and the fecal acholia that the case was not one of ordinary so called physiologic icterus neonatorum. The absence of jaundice in the other children or near relatives showed that it was not a case of the grave type of familial jaundice. The absence of any history of syphilis in the parents, the health record of the patient's numerous sisters and brothers, and the negative Wassermann reaction in the patient's serum practically certainly excluded syphilitic hepatitis. Septic jaundice could similarly be excluded, for although there had been a discharge from the navel there were no signs suggesting direct relationship between it and the jaundice. Buhl's disease (acute fatty degeneration of the new born) and Winkel's disease (cyanosis febrilis icterica cum hemoglobinuria) could also be excluded. The history of "purpura" in the father suggested hemolytic or acholic family jaundice but the urine and feces and the normal fragility of the red cells excluded this. The diagnosis therefore, rested between obstructive jaundice due to obliteration of the bile passages or possibly gallstones, and the so-called nonobstructive or catarrhal jaundice. There was an indirect van den Bergh reaction, but the necropsy disclosed an occlusion of the common bile duct, which Feldman is convinced was of congenital origin.

2 151 202 (July 26) 1924

Yesterday Today and Tomorrow J B Hall—p 151

Is Statistical Method of Value in Research? Greenwood—p 153

Use of Insulin D M Lyon—p 158

Treatment of Tuberculosis with Sodium Morrhuate J Hume—p 162

*Criteria for Artificial Pneumothorax R C Wingfield and G S Wilson—p 163

*Artificial Pneumothorax L S T Burrell—p 167

*Case of Gaucher's Anemia N H Schuster—p 170

Graduated Exercise for Pneumothorax Patients—Wingfield and Wilson report the results obtained by the graduated exercise treatment of patients on whom an artificial pneumothorax has been induced either by choice or by necessity. They do not advocate this method, but point out that under it no fewer than 49 per cent of patients comprising an unselected, consecutive series of cases have been discharged as much improved and capable of earning their living in the world.

Artificial Pneumothorax—Burrell sums up his views as follows. Artificial pneumothorax should be regarded not as a cure for tuberculosis of the lung but as a safe method of resting the diseased part and it should be used in conjunction with other methods of treatment. The success of the treatment is largely dependent on really keeping the lung at rest, taking each case individually and arranging the dosage and intervals between the refills according to the peculiarities of the individual patient.

Gaucher's Anemia—The clinical interest of Schuster's case lies in the youthful age of the patient (1 year and 10 months) and in its rapid course. The onset was acute and the child lived only three weeks, having been remarkably well just before. Nearly all previous patients have suffered from epistaxis, in this patient there was no bleeding, but petechiae were present on the abdomen. Death occurred from acute edema of the lung. The histologic findings corresponded to those reported in other cases.

Medical Journal of Australia, Sydney

1 581 606 (June 14) 1924

*Significance of Double Innervation of Voluntary Muscle J I Hunter—p 581

*Operation of Sympathetic Ramisection N D Royle—p 587

*Operation of Ramisection for Spastic Paralysis J I Hunter—p 590

*Transmission of Pneumococcal Infection R Webster—p 591

SUPPLEMENT

Veneral Disease and Abnormal Mind W A T Lind—p 409

Folin and Wu's Method of Blood Analysis O Latham—p 412

Sex in Causation of Mental Psychoses J N McAree—p 418

General Paralysis of Insane W E Jones—p 425

Evolution and Functions of Labyrinth A W Campbell—p 428

Vertigo A E Mills—p 429

Significance of Double Innervation of Muscle—Hunter reviews researches made on the innervation of voluntary muscle, the significance of the presence of two types of motor nerve endings in voluntary muscle, the ordinary motor end-plates of a medullated fiber and the terminations en grappes which are always associated with a nonmedullated fiber. Experimental investigation has proved that the significance of the difference in structure of the two kinds of fibers and of their end-plates is that the medullated fibers are cerebrospinal fibers. The medullated fibers and their end-plates degenerate after section, leaving the nonmedullated fibers and their terminations intact, on the other hand, the medullated fibers are unharmed while the nonmedullated fibers disappear on removal of the sympathetic ganglia. Then, too, organs exhibit certain postural activities, the result of compensatory muscle action. This activity attains its full development when the muscle is under the influence of its nerve supply. Removal of the sympathetic nerve supply to voluntary muscle abolishes plastic tonus. This occurs in normal, spinal and decerebrate animals. Hence, it can be deduced that the function of the sympathetic innervation of voluntary muscle is to maintain posture once assumed by fixing the muscle fibers at their new length. In this way it is responsible for the lengthening and shortening reactions. Compared with tetanic contraction the maintenance of posture by the sympathetic system as in natural attitudes of the animal, involves a low expenditure of chemical energy and obvious fatigue is not developed for long periods of time. The cerebrospinal connection of voluntary muscle imposes a posture on the muscle reflexly or by voluntary activity and the sympathetic innervation subserves the function of maintenance of posture. Hunter maintains that, in part, the process of deafferentation consists of severing the afferent limb of a sympathetic arc and that the efferent limb of this arc is made up of the postganglionic nonmedullated nerve fibers supplying voluntary muscle for plastic tonus also disappears when ramisection is performed. The deafferented specimen differs from the muscle following sympathetic ramisection in that the knee jerk is absent in the former condition while it is present, though less exaggerated and without the shortening reaction in the latter. In other words, the jerk element remains after sympathectomy, but disappears when the posterior nerve roots are severed. In decerebrate rigidity both these reflex arcs are released from control. Royle's experiments are the first to show consistent loss of plastic tone in decerebrate rigidity.

Sympathetic Ramisection—Royle describes at length his technique for performing lumbar ramisection by removing the rami communicantes only. There is no danger of interfering unintentionally with the functions of the intestines or the bladder as long as the medially directed fibers from the second, third and fourth lumbar ganglia are left intact. Division of the abdominal sympathetic trunk below the fourth ganglion only affects the sympathetic fibers traveling with the fifth lumbar and the sacral nerves. The technical details for performing cervical ramisection are also given. Royle's operation was described in an abstract published in THE JOURNAL March 29, 1924 p 1082.

Ramisection for Spastic Paralysis—Hunter reviews the anatomy of the nerves involved in Royle's operation of ramisection, and correlates the anatomic and clinical aspects of the results achieved by such section. Ramisection of the second, third and fourth lumbar ganglia effectively removes the influence of the sympathetic system from the musculature receiving its nerve supply from the upper part of the lumbar

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Venous Pressure in Normal Persons—The pressure in the arm veins in normal persons has been investigated by Bedford and Wright by fluid manometer according to the technique of Villaret, St. Giron, and Grellety-Bosviel. With the subject recumbent and the arm horizontal, the readings obtained were between 5 and 15 cm. water in 90 per cent of cases. Less constant results were obtained than those recorded by other workers with this method. This method involves errors which probably render the lower readings unreliable, but should prove sufficiently accurate for detecting pathological increases in venous pressure. No reading under 15 cm. water obtained by this method should be regarded as pathological. More accurate determination of low venous pressure is possible if the author's modification is employed. The factors responsible for the normal peripheral venous pressure are discussed.

Inoculation of Heterologous Antigens—Various nonspecific antigens were used by Rosher in an attempt to influence a steady agglutination titer in rabbits. The only instance in which the titer was appreciably affected was when the non-specific antigen bore close serologic relationship to the specific one. Steady agglutination titer remained unaffected by severe constitutional disturbances occurring as the result of infections artificially produced. These results are evidence in support of the reliability of the repeated agglutination method as a means of diagnosis of enteric fever in the inoculated subject.

Glandular Activity in Human Fetus—According to Keene and Hewer the fetal kidney begins to function at about the eleventh week of development. The fetal liver is functioning as an excretory organ at 12 weeks. The fetal gastric mucosa contains pepsin at 16 weeks, but no hydrochloric acid even at full term. The fetal pancreas contains both trypsin and trypsinogen at 16 weeks, both are also present at full term. Pancreatic amylase is present at 24 weeks, and pancreatic lipase at 32 weeks. Intestinal ferments are not present at 32 weeks, but enterokinase is present at 8 weeks. The fetal pituitary contains an active principle at 8 weeks. The fetal thyroid is producing colloid-like secretion at 11 weeks. The fetal suprarenal contains adrenin at 16 weeks but does not give a chromaphil reaction until very much later.

Congenital Occlusion of Common Bile Duct—Feldman's patient was a twin boy, aged 8 weeks. It was quite clear from the history, the choluria and the fecal acholia, that the case was not one of ordinary, so-called physiologic icterus neonatorum. The absence of jaundice in the other children or near relatives showed that it was not a case of the grave type of familial jaundice. The absence of any history of syphilis in the parents, the health record of the patient's numerous sisters and brothers, and the negative Wassermann reaction in the patient's serum practically certainly excluded syphilitic hepatitis. Septic jaundice could similarly be excluded, for although there had been a discharge from the navel there were no signs suggesting direct relationship between it and the jaundice. Buhl's disease (acute fatty degeneration of the new-born) and Winckel's disease (cyanosis febrilis icterica cum hemoglobinuria) could also be excluded. The history of "purpura" in the father suggested hemolytic or acholic family jaundice, but the urine and feces and the normal fragility of the red cells excluded this. The diagnosis therefore, rested between obstructive jaundice due to obliteration of the bile passages or possibly gallstones, and the so-called nonobstructive or catarrhal jaundice. There was an indirect van den Bergh reaction, but the necropsy disclosed an occlusion of the common bile duct, which Feldman is convinced was of congenital origin.

2 151 202 (July 26) 1924

- Yesterday, Today, and Tomorrow J B Hall—p 151
Is Statistical Method of Value in Research? Greenwood—p 153
Use of Insulin D M Lyon—p 158
Treatment of Tuberculosis with Sodium Morrhuate J Hume—p 162
*Criteria for Artificial Pneumothorax R C Wingfield and G S Wilson—p 163
*Artificial Pneumothorax L S T Burrell—p 167
*Case of Gaucher's Anemia N H Schuster—p 170

Graduated Exercise for Pneumothorax Patients—Wingfield and Wilson report the results obtained by the graduated exercise treatment of patients on whom an artificial pneumothorax has been induced either by choice or by necessity. They do not advocate this method, but point out that under it no fewer than 49 per cent of patients comprising an unselected, consecutive series of cases, have been discharged as much improved and capable of earning their living in the world.

Artificial Pneumothorax—Burrell sums up his views as follows. Artificial pneumothorax should be regarded not as a cure for tuberculosis of the lung, but as a safe method of resting the diseased part, and it should be used in conjunction with other methods of treatment. The success of the treatment is largely dependent on really keeping the lung at rest, taking each case individually and arranging the dosage and intervals between the refills according to the peculiarities of the individual patient.

Gaucher's Anemia—The clinical interest of Schuster's case lies in the youthful age of the patient (1 year and 10 months) and in its rapid course. The onset was acute and the child lived only three weeks, having been remarkably well just before. Nearly all previous patients have suffered from epistaxis, in this patient there was no bleeding, but petechiae were present on the abdomen. Death occurred from acute edema of the lung. The histologic findings corresponded to those reported in other cases.

Medical Journal of Australia, Sydney

1 581 606 (June 14) 1924

- *Significance of Double Innervation of Voluntary Muscle J I Hunter—p 581
*Operation of Sympathetic Ramisection N D Royle—p 587
*Operation of Ramisection for Spastic Paralysis J I Hunter—p 590
*Transmission of Pneumococcal Infection R Webster—p 591

SUPPLEMENT

- Venerer Disease and Abnormal Mind W A T Lind—p 409
Iolin and Wu's Method of Blood Analysis O Latham—p 412
Sex in Causation of Mental Psychoses J N McAree—p 418
General Paralysis of Insane W E Jones—p 425
Evolution and Functions of Labyrinth A W Campbell—p 428
Vertigo A E Mills—p 429

Significance of Double Innervation of Muscle—Hunter reviews researches made on the innervation of voluntary muscle, the significance of the presence of two types of motor nerve endings in voluntary muscle, the ordinary motor end-plates of a medullated fiber and the terminations en grappes which are always associated with a nonmedullated fiber. Experimental investigation has proved that the significance of the difference in structure of the two kinds of fibers and of their end-plates, is that the medullated fibers are cerebrospinal fibers. The medullated fibers and their end-plates degenerate after section, leaving the nonmedullated fibers and their terminations intact, on the other hand, the medullated fibers are unharmed while the nonmedullated fibers disappear on removal of the sympathetic ganglia. Then, too organs exhibit certain postural activities, the result of compensatory muscle action. This activity attains its full development when the muscle is under the influence of its nerve supply. Removal of the sympathetic nerve supply to voluntary muscle abolishes plastic tonus. This occurs in normal, spinal and decerebrate animals. Hence, it can be deduced that the function of the sympathetic innervation of voluntary muscle is to maintain posture once assumed by fixing the muscle fibers at their new length. In this way it is responsible for the lengthening and shortening reactions. Compared with tetanic contraction the maintenance of posture by the sympathetic system as in natural attitudes of the animal, involves a low expenditure of chemical energy and obvious fatigue is not developed for long periods of time. The cerebrospinal connection of voluntary muscle imposes a posture on the muscle reflexly, or by voluntary activity and the sympathetic innervation subserves the function of maintenance of posture. Hunter maintains that, in part, the process of deafferentation consists of severing the afferent limb of a sympathetic arc and that the efferent limb of this arc is made up of the postganglionic nonmedullated nerve fibers supplying voluntary muscle for plastic tonus also disappears when ramisection is performed. The deafferented specimen differs from the muscle following sympathetic ramisection in that the knee jerk is absent in the former condition, while it is present though less exaggerated and without the shortening reaction in the latter. In other words, the jerk element remains after sympathectomy, but disappears when the posterior nerve roots are severed. In decerebrate rigidity both these reflex arcs are released from control. Royle's experiments are the first to show consistent loss of plastic tone in decerebrate rigidity.

Sympathetic Ramisection—Royle describes at length his technic for performing lumbar ramisection by removing the rami communicantes only. There is no danger of interfering unintentionally with the functions of the intestines or the bladder as long as the medially directed fibers from the second, third and fourth lumbar ganglia are left intact. Division of the abdominal sympathetic trunk below the fourth ganglion only affects the sympathetic fibers traveling with the fifth lumbar and the sacral nerves. The technical details for performing cervical ramisection are also given. Royle's operation was described in an abstract published in THE JOURNAL March 29, 1924 p 1082.

Ramisection for Spastic Paralysis—Hunter reviews the anatomy of the nerves involved in Royle's operation of ramisection, and correlates the anatomic and clinical aspects of the results achieved by such section. Ramisection of the second third and fourth lumbar ganglia effectively removes the influence of the sympathetic system from the musculature receiving its nerve supply from the upper part of the lumbar

plexus, notably the iliopsoas, quadriceps extensor and the adductors of the thigh, together with the muscles supplied by the contribution of the fourth lumbar nerve to the lumbosacral trunk. At the same time it avoids any injury to the hypogastric nerves which pass medially to communicate with the hypogastric plexus and after relay in the inferior mesenteric ganglion continue to supply the bladder and rectum. However, severing the white rami of the upper lumbar nerves removes part of the influence of the hypogastric nerves, as is exemplified by the increased activity of the pelvic nerves of the parasympathetic system. This relieves constipation. It is possible to avoid injury to the white ramus communicans of the first lumbar nerve. It is larger than the grey ramus (or rami) and cephalad in position and of a firm whitish appearance. Royle cuts the grey ramus, only, when it is not desired to affect the functions of the bladder and rectum. The nerve fibers which constitute the white rami of the second and third lumbar nerves, may be removed on both sides without noticeable effect. The procedure of severing the ganglionated sympathetic cord removes the influence of the sympathetic system conducted by the grey rami below this level to the roots of the lower part of the lumbosacral plexus. Together with removal of the grey ramus of the fourth lumbar nerve, therefore, it affects notably the muscles supplied by the sciatic nerve and its branches, the gluteal muscles and the small lateral rotators of the thigh. At the same time it has no influence on the pelvic nerve of the parasympathetic system. The cells of this nerve are in the intermediate sacral segments of the cord. They are not connected with the ganglionated sympathetic cord but with small ganglia in the pelvic plexus on the course of the nerves to the viscera innervated by them. Ramisection in the cervical region aims at removing the influence of grey rami on the roots of the brachial plexus. These roots lie behind the scalenus anterior. By tracing the nerves to the intervertebral foramina, Royle has succeeded in obtaining a very complete effect on severing the connections which present themselves.

Transmission of Pneumococcus from Mother to Child.—Webster reports a case in which the Type II pneumococcus was recovered from the pus obtained from the knee joint of a 3 months old infant affected with acute arthritis and points out especially that contact with Type II pneumococcus occurred between mother and baby and that the mother acted as a "carrier" of Type II pneumococcus for a period of at least twenty-one days. It is submitted that the mother acquired an infection of her respiratory tract by pneumococcus Type II and passed it on to her baby in whom it first appeared as a catarrhal inflammation of the upper air passages and subsequently as a purulent arthritis.

1 629 646 (June 28) 1924

- *Syphilis in Relation to Gastric Disorders. F. S. Hone—p. 629
- Congenital Hypertrophic Stenosis of Pylorus and Pylorospasm. P. I. Hipsley—p. 632
- *Aspergillosis of Pleura with Sclerotium Formation. J. B. Cleland—p. 634
- Mediastinal and Retroperitoneal Lymphogranuloma. A. Goode—p. 635
- *Hydatidiform Mole of Broad Ligament. J. B. Cleland and N. Wigg—p. 636

Syphilis and Gastric Disorders.—Hone cites three cases, one of gastric syphilis simulating carcinoma of the stomach, one of gastric ulcer with symptoms like gastric crises in tabes dorsalis and a third case in which the whole of the aorta was involved in a process which seemed to be a mixture of a syphilitic process and the ordinary senile arteriosclerosis. Near the pylorus was a large fungating carcinomatous mass 12 cm. (4 inches) in diameter attached to the posterior wall by a wide base. Behind the stomach was a mass of enlarged aortic glands which extended upward to the diaphragm and downward to the bifurcation of the aorta. Section of these showed them to be firm and elastic, and microscopic examination showed both these and the original growth to be carcinomatous in nature.

Aspergillosis of Pleura.—Following an operation for empyema the result of a gunshot wound, Cleland's patient continued to be ill. Material from the thoracic sac was found to contain an aspergillus resembling *A. fumigatus* and *A. bronchialis* but the surface mycelial threads and condi-

ophores were brownish. Hence, this specimen would seem to belong either to a new species or to one not yet known to be pathogenic to man.

Hydatidiform Mole of Broad Ligament.—In view of the history of joint pains, etc., in the case cited by Cleland and Wigg, a tentative diagnosis of acute rheumatism was made and the patient treated accordingly. Against this, however, was the absence of any signs of endocardial affection, in spite of a prolonged history of "rheumatism." Also the nature of the joint affection was not that of rheumatic fever. In a few days nervous symptoms developed, the diagnosis of acute rheumatism was withdrawn and that of tuberculous meningitis considered. The results of lumbar puncture, however, did not uphold this, nor did the periods of quiescence between the rigors. An ordinary vaginal examination did not reveal much beyond retroversion of the uterus. The correct diagnosis was made at the necropsy. The pregnancy seemed to have been located in the extreme end of the left cornu of the uterus and in the adjacent uterine end of the fallopian tube. The remains of placental tissue in the uterine cavity and its wall did not macroscopically or microscopically show definite evidence of hydatidiform change, though there was invasion of the wall by placental tissue. This change was very pronounced in the placental tissue in the fallopian tube and filling the broad ligament. Rupture of the thin covering layer of the broad ligament had given rise to a rapidly fatal intraperitoneal hemorrhage.

2 124 (July 5) 1924

- *Differential Leukocyte Percentages of Residents of Brisbane, Queensland. W. C. Sweet—p. 1
- Puerperal Septicemia. F. S. Taylor Thomas—p. 5
- Etiology of Anterior Metatarsalgia. N. D. Royle—p. 9
- Retroflexion of Iris. A. J. MacDonald—p. 10
- Amyotrophic Lateral Sclerosis. L. Murphy—p. 10

SUPPLEMENT

- Insanity in Australian Aboriginal. Evolution of Mental Disease. J. Bostock—p. 459
- Pyloric Stenosis. S. W. Ferguson—p. 465
- Congenital Pyloric Stenosis. R. M. Downes—p. 467
- Tuberculous Cervical Glands. R. M. Downes—p. 469
- Dysenteric Conditions in Children. E. M. Little and M. J. Ross—p. 472
- Id. F. H. Berre—p. 474
- Serum Treatment of Bacillary Dysentery in Children. R. Webster—p. 475
- Rickets in Australia. F. I. Doherty—p. 476
- Rickets. H. M. Mayo—p. 478
- Id. M. Harper—p. 479

Differential Leukocyte Count of Australians.—The grand average of the counts made by Sweet was 52.2 per cent neutrophil cells, 32.0 per cent lymphocytes, 6.3 per cent endothelial leukocytes, 9.1 per cent eosinophil cells and 0.4 per cent basophil cells.

Tubercle, London

G 409 464 (June) 1924

- Mortality from Pulmonary Tuberculosis of Men in London in Relation to Age and Occupation. W. B. Knobel—p. 409
- *Excess of Vitamin B in Treatment of Experimental Tuberculosis. F. W. Basset Smith and S. R. Cloysne—p. 420
- Effects of Lethargized Air on Tuberculous Guinea Pigs. H. Sewall and H. Gutstein—p. 426
- Mechanism of Respiratory Tract Infection. A. L. Bloomfield—p. 438

Use of Vitamin B in Treatment of Experimental Tuberculosis.—The precise value of vitamin B in the treatment of tuberculosis was made the subject of experimental study by Smith and Cloysne. The animal used was the guinea pig. All animals were kept in metal cages given a generous diet of crushed oats and green vegetables and the vitamin B added as an accessory to the diet. The source of vitamin B utilized was a commercial yeast preparation. The strain of *Bacillus tuberculosis* used was a human strain. Control animals which were infected but not fed yeast were also under observation. The duration of illness of the infected animals was relative to the dose injected, and there was a parallelism between the two series. All animals showed a gain in weight for some weeks following inoculation and then a rapid decline. The yeast fed animals lived 131 and 138 days, respectively, as against 112 and 160 days' duration of life in the controls. These experiments are recorded solely because of the importance of the whole subject of vitamins in relation to tuberculosis and not for the purpose of drawing conclusions.

Annales des Maladies Veneriennes, Paris

19 401 480 (June) 1924

- *Inherited Syphilis in the Second Generation G Higoumenakis — p 401 Begun p 324
- *Neurorecurrences Under Bismuth Kislitchenko — p 442
- Acute Gonorrhea with Syphilitic Chancre in Urethra Citzeliss — p 456

Inherited Syphilis in the Second Generation—Higoumenakis gives the details of nine cases published since 1908 and of thirteen from his own observation, in which the inherited syphilis had flared up in the second generation, even when it had lain latent through the first generation. The Wassermann reaction may be negative, notwithstanding hemiplegia or other manifestations of the spirochetal lesions. Treatment should be the same as for acquired syphilis, possibly supplemented with organotherapy, as the inherited taint in the second generation is liable to be as grave as in the first generation.

Neurorecurrence Under Treatment of Syphilis—Kislitchenko reports twelve instances of neurorecurrence under systematic treatment with bismuth.

Archives Urologiques, Paris

4 101 238, 1924

- *Denervation of the Kidneys P Flindrin — p 101
- Effect of Ligation of Ureter in Dogs Cymossa and Verliac — p 169
- *Suppuration Around the Urethra P Fouquau — p 201
- Arterial Lesions in Renal Tuberculosis Berné Lagarde — p 231

Severing the Nerves in the Pedicle of the Kidney—Legueu has applied this method of treating nephralgia in eight cases. The pains were completely arrested at once. The results with the earlier, partial denervations were satisfactory in every respect, but in his last case the operation was, perhaps, too complete, and the secreting function of the denervated kidney has been arrested during the month to date. The operation is something like a periaarterial sympathectomy, as he shows with sixteen illustrations. Not only pains in the kidney but reflex anuria might be influenced, thus avoiding an operation on the second kidney.

Phlegmonous Periurethritis—Fouquau was unable to find any trace of a stricture in 50 per cent of the twenty cases he reports, and anaerobes were not constantly present.

Bulletin de l'Académie de Médecine, Paris

92 917 942 (July 22) 1924

- Occupational Lead Poisoning F Heim et al — p 930
- Congenital Debility G Sales and P Valléry Radot — p 932
- *Ultraviolet Rays in Ovarian Insufficiency J Saidman — p 938

Ultraviolet Rays in Ovarian Insufficiency—Saidman treated by ultraviolet rays with good results in seventeen cases of amenorrhea, delayed and painful menses, irregular menstruation in the tuberculous and atrophy of the ovaries after radiotherapy. He uses a slight skin dose, the first exposure involving irradiation of the entire body at a distance of 50 cm during one to two minutes for each of the three or four fields. In the next exposures the distance is decreased by 5 cm to a minimum of 30 cm and the time is increased by a half to one minute to a maximum of ten minutes. If the erythem does not occur in from six to twelve hours, a local irradiation of the hypogastric, thyroid and lumbosacral regions is added.

Bulletins de la Société Médicale des Hôpitaux, Paris

48 1091 1116 (July 11) 1924

- Spirochetosis Icterohemorrhagiae M Garnier — p 1092
- *Retrolubar Neuritis in Multiple Sclerosis Rivet and Jany — p 1093
- Hirsutism Diabetes and Melanoderma Labbe and Boulon — p 1097
- Thoracoplasty in Tuberculosis C F Gondolfo — p 1101
- Radiculitis and Poliomyelitis in Meningitis Recovery V de Lavergne and R Bize — p 1104
- *Gangrene of Pneumococcus Origin Ardin Delteil et al — p 1107
- Congenital Megacolon A Berge et al — p 1111

Retrolubar Neuritis in Multiple Sclerosis—Rivet and Jany report a case of retrolubar neuritis, with impairment of vision, which disappeared under local treatment, but was followed ten months later by typical symptoms of multiple sclerosis. They warn not to ascribe this first symptom of a multiple sclerosis to a latent sphenoidal sinusitis.

Gangrene of Pneumococcus Origin—Ardin-Delteil, Levi-Valensi and de Peretti observed a patient with gangrene of the great toe, occurring during convalescence from pneumonia. Treatment by sodium citrate was efficient.

48 1117 1182 (July 18) 1924

- *Tuberculosis with Diabetes L Bernard and M Salomon — p 1118
- Thyroid Treatment in Myxedema J Comby — p 1122
- Allergy in Diphtheria Lereboullet and Joannon — p 1123
- Diphtheria and Diphtheria Anatoxin H Darre et al — p 1137
- *Acute Rheumatism in Tuberculosis A Pelle — p 1141
- Method of Preparation of Opium Le Noir and Herissey — p 1144
- Cholesterol and Biliary Lithiasis E Chabrol et al — p 1145
- Myxedema in Dwarf Puberty Follows Thyroid Treatment Laignel Lavastine et al — p 1160
- Recklinghausen's Disease Laignel Lavastine and Dauplain — p 1163
- *The Prognosis in Hypertension C Aubertin and E Rigal — p 1167
- Anomaly of the Sacrum A Leri et al — p 1173
- Stormy Defervescence in Typhoid Fever G Caussade et al — p 1175
- Dehiscence of Chest Wall from Cancer Renaud and Chatagnon — p 1181

Pneumothorax in Tuberculosis Combined with Hyperthyroidism—Bernard and Salomon report a case of goiter associated with diabetes and a tuberculous cavity in one lung. An induced pneumothorax exerted a surprising effect, as the tubercle bacilli and fever disappeared, also the glycosuria.

Tuberculosis and Rheumatism—Pelle observed acute articular rheumatism in three patients with pulmonary tuberculosis. Absence of tubercle bacilli in the joints, the efficacy of salicylate treatment, and the trend toward recovery suggested the nontuberculous origin of the affection. The acute rheumatism did not produce either antianaphylaxis or aggravation of the tuberculosis.

The Ureosecretory Coefficient in Hypertension—Aubertin and Rigal's research on forty-four patients showed that a permanent hypertension may coexist with a constantly normal secretion of urea. There is no constant proportion between the two phenomena. As the azotemia is normal in 75 per cent of such cases, the prognosis may be based on the coefficient. If the ureosecretory coefficient is normal, there need be no restriction of proteins, as complications on the part of the kidney are scarcely likely to occur. The case is grave if the coefficient is high. But in hypertension, even with slight albuminuria, death occurs more frequently from rupture of vessels or insufficiency of the heart, than from uremia.

Comptes Rendus de la Société de Biologie, Paris

91 421 516 (July 18) 1924 Partial Index

- *Colloids and Minerals in Cell W Mestrezat and Janet — p 428
- *Action of Phagocytosis in Respect to Bismuth Sazerac and Vauris — p 430
- *Organ Extracts from Starving Animals P Carnot and E Terris — p 446
- *Bacteriophage in Treatment of Skin Disease Gougerot and Peyre — p 452
- *Transient Albuminuria in Runners Labbé et al — p 469
- *Action of Formaldehyde on Antibodies J Forssman — p 471
- Importance of Diphenylamin in Tests for Occult Blood V Ciocileu and C Nicolesco — p 480
- *Vaccination by Way of the Skin Combiesco and Popesco — p 484
- *Action of Papaverin on Stomach D Danielopolu et al — p 495
- Respiratory Phenomenon Induced by Compression of Vagus Danielopolu et al — p 497
- *Neo Arphenamin in Malaria C Goresco and C Popesco — p 500
- *Bacteriophage in Tonsil Exudate G Petrovanu — p 502

Colloids and Minerals in Cell—Mestrezat and Janet's research proved an interdependence of the colloids and mineral elements in the metabolism of the cell.

Phagocytosis and Bismuth—Sazerac and Vauris' experiments on rats and rabbits showed that the action of bismuth on trypanosomes and spirochetes is due to phagocytic activity of the leukocytes. They convert the insoluble bismuth into a soluble product which exerts a therapeutic effect.

Loss of Weight Through Organ Extracts from Animals in Inanition—Carnot and Terris found that the injection of an extract of stomach mucosa from animals in inanition, containing no albumin, produced in a normal rabbit a loss in weight of 525 gm in twenty-six days. An extract of pancreas tissue (not containing albumin and lipid) caused one dog to lose a ninth part of its weight. A similar lung extract induced in a rabbit a decrease of one eleventh of its weight in eight days. Use of the muscle and bone marrow of fasting animals did not seem to affect the nutrition. But the extract of lung tissue of an animal that was being fattened produced

a rapid augmentation in weight. The findings may have a therapeutic import in obesity.

The Bacteriophage in Treatment of Skin Diseases—Gougerot and Peyre treated locally with an antistaphylococcus bacteriophage added to staphylococci isolated from the pustules four cases of a sycosis with a pustular dermo-epidermitis. A complete recovery in two instances was manifest, and considerable improvement has already been realized in the two still under treatment. Good results have been obtained in treatment of recurring furunculosis.

Albuminuria of Runners—Labbe, Violle and Nepveux noted in the young and healthy runners, immediately after the race, from traces to 0.05 per cent of albumin in the urine. The presence of albumin was not in connection with the pH of the urine, in any respect. They assume that the prolonged exertion, causing exaggerated oxidation in the organism and excessive cellular wastes, may induce a transient change in the kidneys, or changes may occur in the serum albumin favoring its passage through the kidney, or the repeated jarring of the kidneys from the running may cause congestion in them.

Action of Formaldehyd on Antibodies—Torssman confirms that the antibodies, except the antitoxins, are sensitive to formaldehyd, and in the same way, he says, as the Bordet-Wassermann substance.

Mechanism of Vaccination by Way of the Skin—Vaccination against anthrax, by way of the skin in guinea-pigs proved to Combiesco and Popesco to be not merely a local immunity, restricted to the cells of the skin, other factors are involved. Some organic factors possibly opsonins, enhance the phagocytic activity.

Action of Papaverin on Contraction of Stomach—Danielopolu, Simici and Dimitriu observed that an intravenous injection of from 1 to 3 cg of papaverin produced in man a stimulation with exaggerated, even spasmodic, contractions of the stomach. This is followed by a paralysis of the stomach, as a transient exhaustion owing to overwork. Action of the papaverin is similar to the effect produced by excitation of the vagus nerve, or excitation of the walls of the stomach.

Neo-Arsphenamin in Malaria—Goresco and Popesco's opinion is that neo-arsphenamin does not destroy *Plasmodium praecox* but is an efficient adjuvant to quinin. Weak doses of neo-arsphenamin make evident the presence of hematozoa in cases of malaria, in which examination of blood is negative.

Lysis by Exudates of Sore Throat—Petrovich's conclusion is that some exudates of the tonsils especially in scarlet fever, may exert a lytic action on certain species of the colon bacillus, although the colon bacillus is not present in the throat.

Gynecologie et Obstetrique, Paris

9 493 568 (June) 1924

*Reactivation of Senile Uterus P. Moulouquet-Doleris—p. 493

*Tardy Cesarean Section T. Asteriades—p. 515

Extensive Hysterectomy for Cancer of Cervix Douay—p. 519

Metrorrhagia After the Menopause—Doleris summarizes 52 observations of reactivation of the senile uterus by an ovarian tumor. The list includes 7 personal cases and 19 from Hartmann's service. In 5 of the total cases the uterine hemorrhage was profuse and did not recur, but generally there was daily dribbling of blood for weeks or months, sometimes with a certain periodicity. Metrorrhagia was noted only in about 25 per cent of 74 cases of ovarian tumors.

Tardy Cesarean Section—Asteriades ascribes to the Mikulicz drain the successful outcome of the operation in a gravely infected case forty-eight hours after rupture of the membranes, the fourth day of labor. Subtotal hysterectomy followed the cesarean section.

Journal de Chirurgie, Paris

23 577 700 (June) 1924

*Pedunculated Tumors of Stomach A. Gosset et al.—p. 577

*Wedge Resection of Uterus P. Lecene and F. D. Allaines—p. 628

Pedunculated Tumors of the Stomach—Gosset, Bertrand and Loewy emphasize the benign nature of these tumors, saying that in 27 of the 66 cases they have collected there were absolutely no symptoms to attract attention to the stomach. They tabulate the details of the entire number, and protest against the label "sarcoma" which has generally been applied. Metastasis has never occurred except in cases of malignant degeneration of the primarily benign growth. In 25 of the 57 operations the tumor was removed by merely cutting out the small base in the stomach wall.

Remote Results of Wedge Resection of the Fundus of the Uterus—The great advantage of this *hysterectomie fundique* is that one or both ovaries are left unmolested. Of the seventy-one women treated in this way for fibroma, extra-uterine pregnancy or salpingitis, forty-seven have been traced to date. The affection for which the operation was done was permanently cured, and menstruation continued in all, but this technic was not applied unless conditions were promising for healing.

Paris Medical

53 80 (July 19) 1924

Surgery of Children and Orthopedics in 1924 A. Monchiet and C. Roederer—p. 53

*Nontuberculous Hip Joint Disease G. Masarbauer—p. 65

*Renal Tuberculosis in Children P. Mathieu—p. 68

Treatment of Congenital Clubfoot A. Treves—p. 71

Fract. Traumatic Spondylitis C. Roederer—p. 78

Nontuberculous Hip Joint Disease—Masarbauer's opinion is that a chronic arthritis of the hip may be not only of tuberculous or syphilitic origin but it also may be a tardy manifestation of an attenuated general infection or an osteomyelitis.

Tuberculosis of the Kidney in Children—Mathieu reports three cases of renal tuberculosis in children and points out that polyuria with light colored and cloudy urines, lumbar pains, pollakiuria and cystalgia are indications for immediate examination of the urine for tubercle bacilli.

81 92 (July 26) 1924

Reactivation of Wassermann Reaction R. Krefling—p. 81

*Diathermy in Uterine Cancer H. Bordier—p. 84

*Quinin by the Vein in Chronic Malaria P. Millous—p. 88

Diathermy in Cancer of Uterine Cervix—Bordier extols treatment of cancer of the cervix by diathermy combined with deep radiotherapy. He uses a disk electrode.

Intravenous Injections of Quinin in Malaria—Millous recalls that intravenous injections of quinin in chronic and especially in pernicious malaria are followed by a severe hyperthermic shock sometimes even collapse with rigidity. But the disturbances are transient, and a complete recovery may occur in cases in which other methods were without results.

Presse Medicale, Paris

32 629 640 (July 26) 1924

Contracture of Pyramidal Origin Fox and Chavany—p. 629

*Exsanguination Transfusion in Toxemias L. Chémisse—p. 635

Exsanguination Transfusion in Toxemias—Chémisse says that Robertson's exsanguination transfusion in treatment of accidental or endogenous toxemia is encouraging, and ought to be a routine practice in hospitals. V. Pauchet's occasional failures in the same line of experiences were probably due to the inadequate amounts of blood withdrawn.

32 641 648 (July 30) 1924

*The Blood Reveals Latent Syphilis E. Leredde—p. 641

Technic for Therapeutic Tracheofistulization Rosenthal—p. 644

The Blood Findings Reveal Latent Inherited Syphilis—Leredde emphasizes the importance of examination of the blood in latent hereditary syphilis, *cryptosyphilis hereditaria*. In children adenopathic adenoids, enlargement of the spleen, hydrocele and congenital malformations should suggest a syphilitic affection. They are indications for examination of the blood, although there may never have been any clinical manifestations of syphilis, and the fixation reaction is negative. Of seventy-one syphilitic children, ranging from 1 to 16 years, not one had a normal blood composition. Anemias, monocytosis and increased proportions of polymorphonuclears are common.

32 649 656 (Aug 2) 1924

- Syphilis from Medicolegal Standpoint G Thibierge—p 649
*Subacute Inguinal Lymphogranulomatosis M Favre—p 651
Specific Streptococcus in Scarlet Fever J Mouzon—p 652

Etiology of Inguinal Lymphogranulomatosis—Favre declares that the subacute inguinal lymphogranulomatosis which he saw, is the same as climatic bubo is a specific venereal disease, a clinical entity

Revue Franç de Gynecologie et d'Obstet, Paris

19 337 368 (June 10) 1924

- Dysmenorrhea and Anaphylaxis P Drlche—p 337
Menstruation as a Form of Anaphylaxis P Carlini—p 345
Acute Amniosis in Pregnancy L Roudke and R Shwinski—p 347
Intuitory Treatment in Obstetrics E Gajoux and Matet—p 350

Menstruation as a Form of Anaphylaxis—Carlini's opinion is that menstruation is a biologic process analogous to anaphylactic shock. It induces also the retrogression of the corpus luteum. The changes in the uterine mucosa, and other signs of the maturing ovum are produced by a second, less intense anaphylactic shock from resorption of elements of the ovum. This may explain so-called essential metrorrhagia and menorrhagia and suggest effectual treatment by measures to induce intranaphylaxis

Pituitary Extract in Obstetrics—Gajoux and Matet relate three instances of death of the fetus and two cases of rupture of the uterus after injections of pituitary extract

Schweizerische medizinische Wochenschrift, Basel

54 625 648 (July 10) 1924

- Action of Warm Mineral Waters on Circulation Kornmann—p 625
Postoperative Stage of Empyema L Hofbauer—p 632
Transillumination of Sinuses A Junod—p 636
Late Metastasis of Thyroid Sarcoma Cornioley—p 638

Postoperative Stage of Empyema—Hofbauer examined empyema patients who had been treated with Bulau's siphon drainage. Some of them had a sensation of oppression and grave dyspnea when they inclined the thorax or lay on the affected or healthy side. In all of them the diaphragm was adherent to the lateral wall of the chest. The phrenicocostal angle had disappeared. Gradually increasing exercise stretched the adhesions sufficiently to make the patients comfortable. Many persistent suppurations are due to the presence of a foreign body in the pleural cavity

Transillumination of Sinuses—Junod finds transillumination useless in diagnosis of affections of the frontal sinus. It may be helpful in disease of the maxillary sinus especially with practitioners who cannot use the roentgen rays

Late Metastasis of Thyroid Sarcoma—Cornioley describes a case of multiple sarcomas of the intestine and extremities occurring nine years after removal of a sarcoma of the thyroid

54 693 712 (July 31) 1924

- Sedimentation Test in Gynecology O Burchhardt Socin—p 693
Closed Tuberculous Cavity in Kidney R Allemann—p 696
Congenital Stenosis of Aortic Conus H Muller Jr—p 702
Typhoid and Syphilis in Infant D Vischer—p 706

Closed Tuberculous Cavity in Kidney—Allemann reports on three cases of closed tuberculous cavities in the kidneys. Two of them could have been considered as instances of alleged spontaneous healing (autonephrectomy). In spite of this, one patient died after the operation with signs of acute insufficiency of the suprarenal capsules (one was caseous and was removed). The other died from mixed infection and peritonitis

Typhoid and Syphilis in Infant—Vischer reports the history and necropsy findings in a case of congenital syphilis with typhoid in an infant 11 weeks old

Polichinico, Rome

31 965 1000 (July 28) 1924

- Cultivation of Intestinal Protozoa V Puntoni—p 965
Cultivation of Spirochaeta Icterohemorrhagiae V Vanni—p 966
Case of Meningeal Hemorrhage E Caradonna—p 968
Syphilitic Meningitis and Second Generation of Inherited Syphilis A Guerricchio—p 972
Vaccine Therapy of Typhoid D Clemente—p 976

Cultivation of Spirochaeta Icterohemorrhagiae—Vanni incubates pieces of liver from infected guinea-pigs at 37 C

with equal amounts (5 cc) of physiologic sodium chlorid solution and horse serum. He covers the fluid with from 1 to 2 cc of nonsterilized liquid petrolatum. The resulting symbiosis with bacilli seems to be favorable. The spirochetes grow rapidly (in three days) at body temperature (instead of at 22 C) and keep their virulence for two years if transplanted every three months. The experiments were also positive with the alkalinized urine from infected guinea-pigs. Consequently the method might be used for diagnostic purposes with human urine

Riforma Medica, Naples

40 649 672 (July 14) 1924

- *Kaolin Sedimentation Test G Pennetti—p 649
Friedreich's Disease with Pluriglandular Syndrome Coronari—p 651
Artificial Pneumothorax G Breccia—p 656

Kaolin Sedimentation Test—Pennetti followed Pitimadri in using a kaolin suspension instead of erythrocytes to test the suspension stability in the serum. The sedimentation took on an average ten minutes in water and five minutes in the blood serum from healthy men and four minutes in women. In patients with cancer, tuberculosis, syphilis, acute infections and other diseases the speed was increased to three minutes. The supernatant serum used for a second test caused delayed sedimentation

40 673 696 (July 21) 1924

- Farewell Address E Maragliano—p 673
Occult Bleeding E U Fittipaldi—p 677
*Tuberculosis and Anaphylaxis P Brusa—p 679
Hypernephroma with Hemolytic Anemia L Lenaz—p 681

Occult Bleeding—Fittipaldi claims priority in using strong alkalis for extraction of feces and stomach contents. The hemochromogen resulting from this extraction gives the most pronounced spectrum of all the products of hemoglobin

Tuberculosis and Anaphylaxis—Brusa's experiments on uteri of guinea-pigs speak against the identity of anaphylaxis and the tuberculin reaction. Uteri of animals injected previously with tuberculin or infected with tubercle bacilli did not respond to the injection of tuberculin nor of these bacilli. Serum from children with a strong cutaneous reaction failed to produce in guinea-pigs a passive anaphylaxis to tuberculin or to a suspension of tubercle bacilli

Hypernephroma with Hemolytic Anemia—Lenaz reports the history of a woman, aged 52 with signs of hemolytic anemia (lowered osmotic resistance and urobilinuria but low color index). A movable tumor in the left hypochondrium simulated an enlarged spleen. Biopsy revealed a hypernephroma instead

Rivista Critica di Clinica Medica, Florence

25 185 208 1924

- Jaundice During Arsphenamin Treatment G Natali—p 185
*Tubercle Bacilli in Body Fluids F Venier—p 193

Determination of Tubercle Bacilli in Body Fluids—Venier extols the value of iron hydroxid as a test for body fluids. In contact with a few drops of it, the urine and the cerebrospinal fluid behave like an electronegative solution rapidly precipitating the hydroxid. It carries the tubercle bacilli down with it. He has found this technic successful when all others had failed

Anales de la Facultad de Medicina, Lima

6 157 264 1924

- *The Colon Bacillus R Rebagliati—p 157
The Teaching of Clinical Radiology C Campodonico—p 167
Radiology of Upper Alimentary Tract Idem—p 180
*Peruvian Verruca P S Mimbela—p 192
*Pneumococcus Meningitis C A Armestar Valverde—p 211

The Colon Bacillus—Rebagliati presents evidence to confirm the aggravating influence of mixed infection with the colon bacillus in diphtheria and other diseases and infectious processes

Peruvian Verruca—Mimbela accepts that Oroya fever and Peruvian verruca are different phases of the same infection. Vague symptoms, fever and rapid anemia label the case at once when it is known that the patient has come from the one known narrow zone in the world in which the disease is endemic

Pneumococcus Meningitis—Armestar relates that the pneumococcus meningitis was generally secondary to pneumonia, and ran its fatal course in from twelve to forty-eight hours. Only one of his twelve patients recovered. Pneumococcus antiserum seemed to fail completely in these meningeal manifestations, as also in the case of primary pneumococcus meningitis.

Brazil-Medico, Rio de Janeiro

2 114 (July 5) 1924

- *Pathologic Physiology of Diabetes A. L. Pimenta Bueno—p. 1
- Rhodnius Pictipes in Northern Brazil A. da Matta—p. 8
- Case of Orbital Abscess E. Campos—p. 8
- Recent Medical Literature in France Desautels and Trolard—p. 9 Cont. n

The Pathologic Physiology of Diabetes—Pimenta Bueno reiterates that all the facts of spontaneous and experimental diabetes and phlorizin glycosuria are explained by a temporary or permanent vasoconstriction of the capillaries in the liver. The blood thus partly shut out of the liver is diverted in excess to the kidneys.

2 1528 (July 12) 1924

- *Serodiagnosis of Bacillary Dysentery A. Guimarães—p. 15

Serodiagnosis of Bacillary Dysentery—Guimarães states that macroscopic agglutination is more reliable than the microscopic in the diagnosis of bacillary dysentery and detection of carriers. The test was positive by the seventh day of the disease in his experience, and in 75 per cent of the cases examined early in the epidemics but only in 37 per cent after the epidemic had been under way for six months. The colon bacillus causes secondary infection but may become so virulent that it induces a primary epidemic of colitis in its turn. This may simulate typhoid fever and can be differentiated only by sero-agglutination tests.

Semana Médica, Buenos Aires

31 53 120 (July 10) 1924

- Inaugural Lecture in Legal Medicine Nerio Rojas—p. 53
- *Asphyxia Neonatorum R. Bustos Moron—p. 58
- Life Extension B. A. Houssay—p. 59
- Actinomycosis in Left Iliac Fossa J. R. Goyena—p. 67
- Prophylaxis and Treatment of Tuberculosis I. Etcheverry Boneo—p. 75
- Roentgenography of Cavities in Lung A. Bergman—p. 83
- Roentgenography of Pneumonia C. Heuser—p. 91
- Therapeutic Flectrocoagulation E. Cisneros—p. 94
- Tests for Vitamins Sagristume and Spegazzini—p. 100

Treatment of Asphyxia Neonatorum—Bustos Moron relates that for years he has been using the technic recently described by Baumm (summarized in these columns, July 12, 1924, p. 161). It frequently succeeds when all else fails, but he adds that Baumm did not emphasize enough the extreme care necessary to sustain the head of the child with the fingers to avoid too much jerking of the neck.

Siglo Medico, Madrid

74 85 112 (July 26) 1924

- Gage for Roentgen Rays J. and S. Rateras—p. 85
- *Roentgen Rays in Treatment of Infectious Diseases Piga—p. 87
- Tuberculosis in Spain R. Villegas—p. 90
- Cone in Traumatism from Coitus I. Fedriani—p. 91
- Etiology of Epilepsy C. Juarros—p. 92
- Begun p. 29

Gage for Roentgen Rays—The Rateras use disks of wax to gage the rays a mixture of 8 parts wax, 10 parts of paraffin and 2 of liquid petrolatum, with an iontoquantimeter.

Radiotherapy in Infectious and Parasitic Diseases—Piga refers in particular to the application of the roentgen rays according to Pais' method in Italy. Pais aims to stimulate the function of the tissues with an amount of the rays too small to induce even microscopic change—not more than one five hundredth of the skin dose. This treatment has been systematically organized in the marshes around Rome to supplement quinin treatment of malaria and Piga was much impressed with the results during his recent trips to Italy.

Etiology of Epilepsy—Juarros gives summaries of the various theories that have been presented to explain epilepsy, listing 262 publications in the last decade. Sifting them all merely confirms that almost any cause is liable to induce convulsions but for the convulsions to be epilepsy there must be some constitutional mental predisposition and this he ascribes to some developmental defect in the brain.

Archiv fur Verdauungs-Krankheiten, Berlin

33 117 226 (June) 1924

- *Influence of Fats on Gastric Secretion Kalk and Disse—p. 117
- *Connection of Ulcer with Excess of Pepsin A. Gunzburg—p. 133
- Test for Lactic Acid in Gastric Juice I. Boas—p. 146
- *Pyrosis and Yawning Cramer—p. 149
- Siliva and Disorders of Digestive Tract L. Strauss—p. 163
- Vegetable Test Meal B. Cipaldi—p. 181
- Chronic Disease of Bile Ducts Without Calculi L. v. Aldor—p. 187
- Chronic Amebiasis H. Heinemann—p. 203
- The History of Diabetics I. Eibstein—p. 215

Influence of Fats on Gastric Secretion—Sesame oil, administered by Kalk and Disse half an hour before the alcohol test breakfast, slightly decreased the acidity and reduced secretion and evacuation time, due to an earlier and increased reflux from the duodenum. Margarin prolonged the emptying time, and rancid margarin increased the acidity while reducing the evacuation and secretion time.

Connection of Gastric Ulcer with Excessive Proportions of Pepsin—Gunzburg investigated the gastric juice of the fasting stomach which contains pepsin by adsorption on mucus. In tests on 350 patients fully 66 per cent of the group showing extra potent pepsin content proved to be ulcer cases, and hyperpepsinuria was noted in forty-eight patients of fifty-five with ulcer of the stomach. In his opinion the excess of pepsin creates a predisposition to ulcer. In cases of hyperpepsinuria with pain he uses atropin with good result.

Heart-Burn and Yawning—Cramer admits that heart-burn is hereditary. He assumes that it is caused by some endocrine disturbance, and has found guaricol carbonate effectual after failure of other measures. His observation of 100 patients proved that a tendency to morbid yawning may be produced by an insufficient evacuation of stools and gas, and consequent excessive increase of gas-forming bacteria. It is a manifestation of a disturbed sympathetic system due to bacterial intoxication.

Deutsche medizinische Wochenschrift, Leipzig

50 1007 1038 (July 25) 1924

- *Biology and Treatment of Uterine Cancer A. Mayer—p. 1009
- *Paratyphoid B. F. Fraenkel and H. Much—p. 1010
- *Action of Salts on Liver and Pancreas Secretion H. Simon—p. 1012
- *Treatment of Encephalitis Buss and Peltzer—p. 1014
- *Intestinal Changes in Agranulocytosis F. Petri—p. 1017
- *Corns H. Engel—p. 1018
- Artificial Pneumothorax J. Neumayer—p. 1021
- Cerebrospinal Fluid W. Weigelt—p. 1023
- Photodynamic Phenomena A. Passow—p. 1023
- Survey on Neurology H. G. Creutzfeldt—p. 1024
- Measure and Weight Statistics of Schoolchildren Prinz—p. 1026
- American Mortality Statistics Prinz—p. 1027
- Ants as Suture Material Dieterich—p. 1030

Biology and Treatment of Uterine Cancer—Mayer's statistics show that cancer of the uterus in pregnancy has a rather better prognosis than in the nonpregnant. Gross believes that this is due to its earlier recognition. The author found that 45 per cent of the women with uterine cancer had not begun to menstruate before the age of 17 years. This speaks for a hypoplasia of the sex organs as a predisposing factor. He uses roentgen rays before the operation. This improved the primary mortality to 74 per cent chiefly because the gangrenous parts heal.

Paratyphoid B. and Breslau Gastro-Enteritis—Fraenkel and Much conclude from their clinical, anatomic and serologic findings that the so called Breslau gastro-enteritis strain is identical with paratyphoid B. bacilli.

Action of Salts on Liver and Pancreas Secretion—Simon introduced solutions of sodium sulphate and magnesium sulphate and of the salts of Karlov Vary (Carlsbad) into the duodenum. He found an increased secretion of bile and pancreatic juice. The amount of ferments was increased except in a patient with chronic diarrhea, another with chronic pancreatitis and a third with pernicious anemia.

Treatment of Encephalitis—Buss and Peltzer had excellent results in sixteen encephalitis patients with intravenous injections of large doses of trypanflavin (veriflavin) especially in the early stage.

Intestinal Changes in Agranulocytosis—Petri describes the case of a middle aged woman who had slight fever for several months. She died with the typical signs of agranulo-

cytic angina (extreme leukopenia with loss of granulocytes, icterus, necrotic tonsillitis). The necrotic changes were pronounced in the whole digestive tract.

Corns—Engel recommends resection of a part of the basal phalanx in treatment of corns.

Jahrbuch für Kinderheilkunde, Berlin

100 65 174 (June) 1924

- *Serology of Edematous Conditions. Leichtentritt and Zweig—p 65
- *Treatment of Tetany. Scheer, Muller and Salomon—p 85
- *Lipase in Breast Milk. W. Gottstein—p 97
- *Protein Digestion in Infants. Freudenberg and Stern—p 109
- Mechanism of Actual Acidity in Infant Stomach. H. Behrendt—p 115
- Carbonate Tension in Blood and Cerebrospinal Fluid in Various Diseases in Children. Z. v. Bokay—p 120
- Peculiar Malformation of Nose. I. Menyhard—p 128
- The Constitution and Nutrition Question. Plantenga—p 130
- Findings in Fluids in Acute Articular Rheumatism. Pethico—p 141
- Pathogenesis of Acute Digestive Disturbance. XIII. Cattel—p 145

Biologic Classification of Edematous Conditions in Children—Leichtentritt and Zweig reaffirm the important influence of vitamins on the growth of bacteria. In their research addition of lemon juice to the cultures speeded up the growth and feeding lemon juice to guinea-pigs with experimental tuberculosis seemed to transform the disease from the septic, toxic form to a slow chronic form, the virulence of the tubercle bacilli having evidently undergone some modification. In serum from persons with deficiency diseases, diphtheria bacilli grow differently from the growth in normal serums. The bacilli showed evidences of characteristic degeneration. They had no opportunity to examine cases of scurvy, but in the other instances of deficiency disturbances, this behavior of the diphtheria bacilli drew a sharp line of demarcation between them and diseases in which avitaminosis was not a factor, even with apparently identical clinical pictures, as in edema from heart or kidney disease and in tuberculosis with or without edema. The serum from all the children with severe alimentary edema showed pronounced degeneration of the diphtheria bacilli, and when this occurred in the course of any disease, it was explained by some dietetic deficiency underlying or superposed on the disease.

Dietetic Treatment of Tetany—Scheer, Muller and Salomon reiterate that the hydrochloric-acid milk they advocate in prophylaxis and treatment of spasmodophilia reduces secretion in the stomach, insures optimal conditions for the action of ferments, and promotes diuresis. It is prepared by adding 400 cc of decinormal hydrochloric acid solution to 600 cc of whole milk, with 5 per cent sugar. If this is too large an amount of fluid, they give the same amount of acid in 40 cc of normal hydrochloric acid solution, in this event the milk has to be first brought to boiling point and cooled, and the acid is added a drop at a time, stirring constantly. Milk thus prepared forms fine clots and passes through several layers of gauze without residue. Proliferation of bacteria is not to be feared with the pH of 3.7 to 4. Children like it better than buttermilk. The acid is not free but is in the form of phosphates, citrates, etc. They have never seen any harm result from its use, even in one case in which it was taken for three months. The tabulated findings show that it modifies the metabolism considerably, but it is hard to tell which of the changes induced is responsible for the unmistakable benefit, the "positive antispasmodogenic action."

Lipase in Human Milk—Gottstein confirms that after coagulation of the casein in breast milk, favorable conditions for the action of the milk lipase and the stomach lipase then ensue. Breast milk whey, contrary to cow's milk lipase, promotes the action of the stomach lipase.

Digestion of Protein by Infants—The research reported by Freudenberg and Stern on the duodenal juice of healthy infants breast fed or artificially fed, failed to demonstrate any difference in the ferment action on human or cow's milk.

Klinische Wochenschrift, Berlin

3 1385 1424 (July 29) 1924

- *Clinical Significance of Insulin. W. Falta—p 1385
- *Heart and Vessel Tonus. R. Ohm—p 1389
- *Phosphoric and Lactic Acid in Muscles. G. Embden—p 1393
- *Action of Oat Bran Extracts. E. Boden et al—p 1396
- *Water Metabolism. P. Saxl and F. Donath—p 1397
- *Latent Paresis. H. Zingerle—p 1399

*Kahn's Reaction and the Blood Sugar. F. Bernhard—p 1402

*Action of Iodine. H. Ephraim—p 1402

*Vulvovaginitis of Little Girls. Kruspe—p 1403. Reply. Muller—p 1404

*Extrahepatic Action of Insulin. E. Frank et al—p 1404

*Shock After Formaldehyde Injections. H. Dold—p 1405

*Vestibular Reaction. Fischer and Wodak—p 1406

Serum Sickness. K. Ochsensus—p 1407

Hemoptysis. G. Schroder—p 1408. Conc'n

Height and Weight of Berlin Children. K. Freudenberg—p 1411

Clinical Significance of Insulin—Falta finds that the discovery of insulin has not changed the views on the pathogenesis of diabetes. Many divergences of opinion are due to overlooking the varying carbohydrate content of the organism. He is strictly opposed to the theory of the fatty acid-glucose ratio. The results of Petren's diet demonstrate the possibility of avoiding acidosis from a high fat diet by restriction of the protein intake. He believes that the proteins provoke formation of acetone bodies from fat in carbohydrate deficiency. He found it advantageous to divide large insulin doses into four parts—the last to be given before midnight. He was always opposed to artificial abortion in diabetes because he saw good results with a rational diet. Insulin makes such indications entirely superfluous. Insulin lowers the blood sugar more than diet alone, and procures a better rest for the pancreas.

Heart and Vessel Tonus—Ohm reviews the results of his photographic registration of the jugular pulse. He found in some alleged neurasthenics and patients with "heart cramps" distinct indications of an increased or decreased tonus of the heart action. The contractions are very rapid ("jumping") in the latter and slow in the former. The intervals between the contractions of the auricle are prolonged in the hypertonic form.

Phosphoric and Lactic Acid in Muscles—Embden reports on the new investigations of his pupils on muscle contraction. They found an identity of lactacidogen with the hexosediphosphoric acid occurring in fermentations. At least twenty times more phosphoric than lactic acid is split off at the beginning of a contraction. The phosphoric acid quickly becomes resynthesized except in prolonged repetition of contractions. The lactic acid increases progressively sometimes even after tetanus. It seems that phosphoric acid is of importance for the rapidity of a contraction and lactic acid for maintaining it. Therefore the former decreases in tetanus of a muscle while the latter increases.

Action of Oat-Bran Extracts—Boden, Neukirch and Wankell extracted oat-bran with acid alcohol. Four cubic centimeters of a watery solution representing 10 gm of the bran, produced hypoglycemia in rabbits. In man the action on acidosis was more marked than on glycosuria.

Water Metabolism and Reticulo-Endothelial System—Saxl and Donath found that infusion of salt solution causes more pronounced hydraemia in rabbits injected from ten minutes to three hours before with colloidal silver. Such injections lower the water test diuresis in healthy human subjects.

Latent Paresis—Zingerle describes a simple means to reveal a latent paresis in beginning affections of the pyramidal system and the cerebellum. The extended extremity of the patient begins to sink as soon as he closes his eyes. If counter pressure is applied the difference in force is much more evident than with the eyes open. The correction with open eyes does not seem to be a conscious act. The author claims that his symptom appears earlier than the subjective feeling of weakness, the Babinski reflex or other signs.

Kahn's Reaction and Blood Sugar—Bernhard noted a parallelism between Kahn's reaction and hyperglycemia in patients with neoplasms and grave tuberculosis. Both changes as well as the increased phosphate content of the erythrocytes depend on the cachexia.

Action of Iodine—Ephraim found an increased sedimentation speed in four out of five patients who had been taking 0.5 gm potassium iodid three times a day for fourteen days. He attributes it to a change of the surface tension of the erythrocytes.

Extrahepatic Action of Insulin—Frank, Nothmann and Wagner had observed in normal rabbits a marked difference

in the blood sugar content of the femoral artery and vein after intra arterial injection of insulin. They obtained the same result in pancreatectomized dogs. Therefore insulin may act directly on the periphery (muscles) even in diabetic animals.

Shock After Formaldehyd Injections—Dold produced symptoms resembling anaphylactic shock with injections of small amounts of formaldehyd. If it was mixed with serum and left for twenty four hours the action was weaker. He explains it as direct irritation of the endothelial cells. No leukopenia nor lack of complement was produced.

Vestibular Reactions with Simultaneous Lavage of Both Ears—Fischer and Wodak perfuse both ears of a subject in upright position and with closed eyes with 100 cc of water at 20 C. The subject falls forward after a few seconds having a feeling of propulsion. Later a phase of retropulsion appears and changes again. When warm water is used the sequence of symptoms is the reverse. Changes of the position of the head produce falling in the opposite direction except in a 'neutral' position (angle of from 15 to 30 degrees forward). They call these phenomena vestibular pulsion reflexes.

Medizinische Klinik, Berlin

20 1027 1062 (July 27) 1924

Treatment of Epidemic Encephalitis F. Stern —p 1027

The Hemoclastic Crisis M. Kappis and F. Gerlach —p 1011

*Occult Tuberculosis in Children K. Schroeder —p 1035

*Cervical Ribs W. Seyfert —p 1035

Modification of Butter Flour Milk (Moro) O. Gottche —p 1043

Differential Blood Count with Gastric Ulcer G. Martino —p 1010

Protein Therapy of Pernicious Anemia Z. Rausch —p 1042

Cosmetic Surgery of Nose and Ear L. Wodak —p 1042

*Injection Treatment of Hydrocele Rheims —p 1044

*Active Typhus Immunity R. Weigl —p 1046

Progress in Pockgen Diagnosis L. Freund —p 1049

Insurance and Ticket System in Switzerland Hediger —p 1061

Treatment of Epidemic Encephalitis—Stern injects from 50 to 80 cc or more of convalescents' serum intramuscularly in encephalitis. Of the twenty seven patients in the acute or subacute stage who were thus treated one died. None of them had any sequelae which occur otherwise in 40 per cent of patients. The amelioration was extremely rapid in some cases. Nonspecific serum has some results. He compares Rosenow's serum in the latter group. Chronic cases may be treated with large doses of arsenic milk injections and scopolamin and atropin.

The Hemoclastic Crisis—Kappis and Gerlach found leukopenia in simple successive cell counts without having to make any injection. The changes in the peripheral count in the skin and in a mesenteric vessel were frequently parallel. The simultaneous counts on both ears differed widely. The venous blood was less variable.

Occult Tuberculosis in Children—Schroeder uses the intracutaneous reaction with tuberculin concentrations increasing from 1:1,000 to 1:10. He estimates the gain in positive results as 20 per cent.

Cervical Ribs—Seyfert reports the histories of two women with paresis of the brachial plexus due to cervical ribs. One of them had trophic lesions and compression of the subclavian artery. Cicatricial retraction after thyroidectomy seems to have been the provoking agent in the other. Both patients recovered after resection of the cervical ribs.

Differential Blood Count with Gastric Ulcer—Martino found no characteristic differential counts in gastric ulcer patients. Eosinophilia was present in some of them.

Injection Treatment of Hydrocele—Rheims confirms the good results of injection of from 5 to 12 gm of tincture of iodine in hydrocele. A preliminary morphin injection is advisable in some patients.

Active Typhus Immunity—Weigl found only a relative typhus immunity in guinea-pigs previously infected with *Rickettsia prowazekii*. He reports on two typhus infections (one grave) among his co-workers who had had typhus fever five and three years previously. They were feeding daily up to 1,000 infected lice and reinfected themselves. He observed on himself and other supposedly immune persons feeding such lice, an undiagnosed affection with high fever lasting

up to three days. He believes that an immune person may be a dangerous carrier of typhus.

Mittel a d Grenzgeb d Med und Chir, Jena

77 385 544 1924

Gallstone Origin and Structure R. Tornow —p 395

Secretion of Bile, Walzel and Weltmann —p 137

The Obstructing Gallstone and Its Importance for Cholelithiasis B. Naunyn —p 464

Tissue Changes Induced by Ascariids M. Yamauchi —p 469

Physiologic Value of Gouters M. Brinowatzky —p 488

Experimental Study of Cystitis Junction Demel and Prummelkamp —p 515

Indications for Exploratory Laparotomy J. Just —p 76

Munchener medizinische Wochenschrift, Munich

71 1009 1048 (July 25) 1924

Species of Streptococci Schottmuller —p 1009

Lipoid Treatment and Organ Stimulation H. Much —p 1010

So Called Rabbits Syphilis A. Seitz —p 1012

Plethysmographic Heart Function Test W. Frey and H. Lohr —p 1014

Disturbance of Cystin Metabolism G. O. F. Lignac —p 1016

Hamburger's Percutaneous Tuberculin Reaction A. Willgren —p 1017

*Heart Sounds in Infectious Diseases J. Schwarzmann —p 1018

Human Skin Pigment C. Moncorps —p 1019

*Intestinal Influenza in Infants A. Uffenheimer —p 1021

Criticism of Biologic Terms K. W. Chuberg —p 1022

Helday's Guide for the Gastroscope R. Schindler —p 1022

Subtrochanter Osteomyelitis J. Fliser —p 1027

Hidden Cancer C. Ledderhose —p 1027

Population Statistics J. Maurer —p 1029

Expert Evaluation of Internal Sequelae of Injuries Suttman —p 1030

Species of Streptococci—Schottmuller considers differentiation of various species of streptococci as important as differentiation between any germs. His microbic streptococcus putrificus is the cause of more than one third of the puerperal infections. In the thirty years of his continuous observation he has yet to see a single instance in which a streptococcus (hemolytic for example) had changed in human beings into another form (the viridans for example). He has never denied that the latter may have some hemolytic action. Kuge's and Philipps' methods of prognosis of infections from the bactericidal action of the serum are regarded skeptically both for theoretical reasons and on the basis of his diverging results. The site of the infection and not the bactericidal action of the blood determines the outcome.

Lipoid Treatment and Organ Stimulation—Much discusses the importance of lipoids for immunity and the endocrines.

Plethysmographic Heart Function Test—Frey and Lohr used Weber's plethysmographic method on twenty patients with disease of the heart and on five controls. In a healthy person the volume of an arm should increase according to Weber after a few movements of one foot. In heart decompensation the volume should decrease. The authors found the latter symptoms in some healthy men particularly in those with angotonia. The whole test depends chiefly on the function of the blood vessels and their nerves and only secondarily on the alteration of vasomotor centers by a cardiac affection.

Disturbance of Cystin Metabolism—Lignac discovered in the organs of two boys (2 and 3 years of age) multiple deposits of cystin. Both died from atrophy—one with pyelitis and otitis the other with glycosuria.

Hamburger's Percutaneous Tuberculin Reaction—Willgren applied Hamburger's percutaneous tuberculin test to 936 children, using the Pirquet test as a control. He found the percutaneous test at least as valuable if made exactly according to Hamburger's directions.

Heart Sounds in Infectious Diseases—Schwarzmann observed a shortened and less loud first sound as a sign of toxic influence on the heart in infectious diseases. A very low and short first sound almost immediately followed by the second occurs with a more marked affection of the systolic force. If it occurs with tachycardia, the prognosis is serious.

Intestinal Influenza in Infants—Uffenheimer observed grave gastro intestinal symptoms in sixteen well fed infants some of them exclusively breast fed. Five of them died. He considers influenza as the probable cause.

Hidden Cancer—Ledderhose observed an infiltrating cancer of the breast in an intelligent woman who had not noticed

its development. Skin cancer retracts and remains for a long time unrecognized. Syphilitic gummas of the tongue have been only too frequently operated on. Tumors in the upper cervical trigonum may be metastases from a small primary cancer in the pharynx or esophagus. The navel often contains a metastasis from any tumor of the abdomen. One third of prostatic cancers form bone metastases before making any appreciable subjective disturbance. Rectal cancers last usually for a year before they are diagnosed.

71 1049 1084 (Aug. 1) 1924

- *The Abdominal Vessels in Hypertension. M. Brogsitter—p. 1049
Functional Correction of Deformities. H. Spitz—p. 1051
Vertebral Metastases from Latent Source. T. Scholz—p. 1052
Surgery of Uterine Cancer. J. Thies—p. 1054
Treatment of Puerperal Fever. H. Kiehne—p. 1056
Latent Febrile Herpes. P. Bastar and A. Busacca—p. 1056
*Virus of Herpes. W. Gruter—p. 1058
Hohn's Modification of the Meimcke Reaction. K. L. Pesch and H. Schütt—p. 1060
Influenza Meningitis. R. Leuchtenberger—p. 1061
Steam Douche as Adjuvant in Treatment. Fritz—p. 1062
Color Index. H. Ratig—p. 1064
The Augsburg Medical Society 1582. O. Renner—p. 1065
*Reduction of Incarcerated Hernia. A. Krecke—p. 1066
Vocational Tests. Furst—p. 1068
Examinations for Medical Degree. Kerschensteiner—p. 1070

The Abdominal Vessels in Hypertension.—Brogsitter examined the abdominal vessels in thirty-three cases of permanent hypertension (between 200 and 300 mm of mercury). There was no relation at all between the height and duration of the blood pressure and the changes in the mesenteric vessels. Most of the arterioles of the kidneys may be completely obliterated while the mesenteric arteries of the same caliber are still almost intact.

Functional Correction of Deformities.—Since 1913 Spitz has been using a device for treatment of nonimmobilized scoliosis. Its aim is to force the patient to straighten the spine in order to avoid the pressure of the apparatus. Schede has used this principle as well as others. The present general tendency pays great attention to functional corrections. He considers it as unjust that certain authors have denounced Schede as using their inventions.

Surgery of Uterine Cancer.—Thies had better results when he left the ovaries in the body than with the complete Wertheim operation. In so-called inoperable cancers, he reviews the field and makes an artificial anus in one operation, and later extirpates the sex organs with the rectum or bladder, when the putrid process stops.

Treatment of Puerperal Fever.—Kiehne's prognosis *quoad vitam* in puerperal fever is more than twice as good since he has been using injections of arsphenamin and mercuric chlorid.

Latent Febrile Herpes.—Bastar and Busacca inoculated the rabbit cornea with concentrated blood and cerebrospinal fluid from various patients. The cerebrospinal fluid produced the herpes keratitis in eighteen out of twenty-one cases; the blood in fourteen.

Virus of Herpes.—In 1910 Gruter produced dendritic keratitis in rabbits, with diluted vaccine lymph. Later he was able to transmit herpes infections. He found, as a rule, a less virulent virus in herpes zoster, a more virulent in febrile herpes. The herpes virus virulence increased after passage through a rabbit's brain.

Reduction of Incarcerated Hernia.—Krecke considers the operation as the normal treatment of incarcerated hernia. Reposition is allowed in large hernias with a broad ring; if the incarceration has not lasted for more than an hour. Otherwise it is contraindicated, especially with signs of inflammation including great local pains. He makes an injection of 1 or 2 cg of morphin from five to ten minutes before attempting the reduction. The patient's pelvis should be elevated, the thighs flexed. Catheterization is necessary in retention of urine. Local anesthesia with procain decreases the muscle tonus so that spontaneous reposition may occur. A warm bath is also quite helpful for relaxation. Local application of ether may decrease the volume of the incarcerated intestine. No great force and no finger tips should be used. Gurgling sounds announce the beginning of success.

Wiener klinische Wochenschrift, Vienna

37 731 750 (July 24) 1924

- *Localization of Sounds. S. Gatscher—p. 731
Bases of Protein Treatment. W. Weichardt—p. 732. Conc n
*Lung Volume in Exophthalmic Goiter. H. Pollitzer—p. 733
Law of Conservation of Energy. E. Mester—p. 740
The Ear in the Course of Infectious Diseases. E. Urbantschitsch
Supplement pp. 132.

Localization of Sounds.—Gatscher believes that the intensity theory—the oldest theory about localization of sounds in space—is correct. A subject with one ear closed localizes the sounds toward the open side. Deep (low) tones produced at the side of the closed ear are localized correctly, while high sounds cannot pass the obstacle as Kiedl found in registering experiments on a skull. Therefore they are localized on the opposite (open) side. The ears can distinguish two sounds reaching each of them separately if the interval is from 0.175 to 0.03 seconds. The theory that localization is due to the difference of time in which the sound reaches each ear cannot be right. The interval would be at the best 0.006 seconds in man and proportionately less in small animals.

Lung Volume in Exophthalmic Goiter.—Pollitzer found a decreased volume of lungs in chlorosis between the attacks of chronic malaria and in exophthalmic goiter. He considers his technic which he calls 'chromopercussion' as best for determination of the borders of the lungs. The alleged dilatation of the right heart is very frequently only simulated by a retraction of the lung. He believes that a contraction of the pulmonary capillaries accounts for the diminished volume of the lungs.

37 751 770 (July 31) 1924

- Atherosclerosis. Schubert—p. 751. Comment. Bartel—p. 753
Respiratory Gas Metabolism. P. Liebesny—p. 754. Cont'd
*Weil-Felix Reaction in Proteus Infection. C. Sonnenschein—p. 757
Theory of Oversensitiveness. K. Peyer—p. 760
Diagnostic Tuberculin Ointments. F. Melton—p. 764
*Reticulo-Endothelial Apparatus. Pfeiffer and Standenath—p. 765
Endometritis and Hypertrophic Condition of Uterus. L. Adler. Supplement pp. 116.

Weil-Felix Reaction in Proteus Infection.—Sonnenschein observed a secondary proteus infection of an empyema in a child. The patient's serum did not agglutinate her own strain but was active up to a dilution of 1:200 with the Weil-Felix strains X₁₉ and OX₁₉. Nevertheless, this was not a real typhus reaction because the agglutinins remained unchanged after inactivating the serum. The characteristic reaction for typhus is limited to the active serum.

"Reticulo-Endothelial Apparatus."—Pfeiffer and Standenath find that the dispersion of ferrum saccharatum is subject to great changes. It is not suitable for subtle experiments.

Zentralblatt für Gynäkologie, Leipzig

48 1569 1616 (July 19) 1924

- Lipoids and Ovarian Function. R. Meyer—p. 1570
*Back Pains and Sacralization. H. Martius—p. 1576
Causes of Menstrual Pain. W. Schmitt—p. 1583
Conservation of an Accessory Cornu. P. Strassmann—p. 1586
Vaginal Hematoma in Pregnancy. E. Schulze—p. 1591
Gas Phlegmon in a Uterine Myoma. K. Heil—p. 1595
Construction of Vagina from Intestine. Bruckin—p. 1597

Back Pain and Sacralization.—Martius calls attention to a peculiar though rare source of very resistant back pains, namely unilateral sacralization of the fifth lumbar vertebra. The French recommend for *sacralisation douloureuse* roentgen irradiation which assumes a secondary inflammation. A tight-fitting corset might also be recommended. Garre resorted to operation in treating a colleague with good results. Owing to the deep position of the abnormal bone formation surgical intervention is difficult.

18 1617 1680 (July 26) 1924

- *Arthropathia Ovaripriva. C. Menge—p. 1617
*Intra Uterine Implantation of Ovary. A. Mayer—p. 1621
Differentiation of Hemolytic Streptococci. G. Schwarz—p. 1623
Cultivation of Gonococcus from Women. Rother—p. 1633
Significance of Race in Gynecology. R. Knorr—p. 1635
Twenty Five Years of Cesarean Sections. F. Mann—p. 1639
Genital Tumors Complicating Pregnancy. K. Burger—p. 1651
*Resection of Uterus at Abortions. Pfeilsticker—p. 1657

Joint Disturbances Probably from Ovarian Insufficiency—Menge refers to the stiffness or pains or both in knee, shoulder or fingers which he has noticed in a number of cases of amenorrhea induced by roentgen exposures and also in the natural menopause. The arthropathy is usually symmetrical and persistent, but disappears in time without any treatment. He calls attention also to neuralgia ovaripriva.

Intra-Uterine Transplanting of Ovary—In five cases recently, Mayer transplanted a segment of the woman's own ovary into the uterus in order to render conception possible in cases in which the tubes were diseased or had been resected. The implant was cast off in one case, but no untoward by-effects were evident in any instance.

Resection of Uterus in Abortion—Pfeilsticker combated severe hemorrhage at abortion in fourteen cases by vaginal resection of the uterus.

Zentralblatt für innere Medizin, Leipzig

45 569 584 (July 19) 1924

*Scarlet Fever D. Herderschee—p. 569

Scarlet Fever—Herderschee reports his experiences with over 6,900 scarlet fever patients. The mortality from it in Amsterdam was 48 per cent in 1896 and 0.45 per cent in 1912, without apparent causes for the difference. The peak of the morbidity in the fall was marked. Mongoloid idiocy and chickenpox predispose to it. A family predisposition to grave complications was frequently apparent. Scales from desquamation did not seem to be infectious, while purulent complications, such as otitis media, did. Paresthesias in the fingers and toes, and itching were frequent. He believes that the exanthem following burns is frequently of scarlatinal nature. Reddish edema occurs in the second stage in patients with arthritis or myocarditis.

45 585 616 (July 26) 1924

*Chronic Partial Aneurysm of the Heart A. Hanser—p. 585

Chronic Partial Aneurysm of the Heart—Hanser believes in the possibility of diagnosis of a chronic partial aneurysm of the heart. It is due to lesions of the heart muscle from a, usually arteriosclerotic, affection of the coronary arteries. The transitory symptoms of pericarditis in persons with angina pectoris emphasized by M. Sternberg are not as important as the slight fever which follows attacks of angina pectoris. It is due to resorption of the necrotic muscle. Besides being possibly an indication of the formation of a partial aneurysm, it always has a serious prognosis with angina pectoris. He emphasizes the importance of measuring the temperature after such attacks.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

2 323 478 (July 19) 1924

- *Congenitally Narrow Urethra T. S. Klotz—p. 324
- Relation Between Iodine Poor Food and Goiter Jansen—p. 348
- Changes in Pelvis in Perthes Disease Harrenstein—p. 361
- Apparatus for Making Frozen Sections. B. S. Ten Berge—p. 367
- *Injury of Eye from Ammonia P. J. Waardenburg—p. 372
- Recent Research on Heredity by Psychiatrists A. Hutter—p. 374
- Influence of Birth Month on Constitution J. Sanders—p. 409

Blunders in Diagnosis of Pyelitis—A male child, aged nearly 3, had been treated for five months for rebellious pyelitis before the physician heeded the history of pain and difficulty in micturition since birth and occasional abdominal pains and large abdomen. Then, on suspicion of some anatomic anomaly, a contrast suspension of potassium iodid was injected into the bladder. This revealed narrowing of the lumen in the posterior urethra sufficient to account for the urinary disturbances. An eruption developed in a few days resembling measles or serum exanthem with edema and the child died from sudden anuria two days later. Klotz queries whether the death was due to iodine poisoning from the 50 c.c. of 20 per cent potassium iodid injected. Owing to the pathologic conditions in the kidneys this may have been the lethal factor although there was nothing to suggest iodine poisoning except the eruption. He compares with his case the similar ones on record.

Injury of the Eye from Ammonia—Waardenburg calls attention to the extreme gravity of the damage when ammonia

is spurted into the eye. Thies has recently described a case in which one eye had to be removed and cataract developed in the other. In Waardenburg's case, the eye, a year later, looks as if it had passed through central keratitis, and vision is almost entirely lost. He treated the eye at first by rinsing out with physiologic salt solution, and a petrolatum bandage. Later he succeeded in curing the erosions with scarlet red ointment, the young woman being still under treatment. He does not know of any effectual treatment for injury from ammonia, it seems to be more dangerous than corrosion with lime.

Casopis lekaruv ceskych, Prague

63 1113 1140 (July 19) 1924

- Orthopedic Affections with Spina Bifida Occulta Schulz—p. 1113
- Bacteriology of Ozena K. Greif—p. 1117 Cont'd
- Pharmacognosy of Drosera S. Petlach—p. 1121
- Congenital Elevation of Scapula M. Havranek—p. 1125

63 1141 1168 (July 26) 1924

- *Bone Neoformation in Labyrinth V. Tesar—p. 1141 Cont'd

63 1169 1196 (Aug. 2) 1924

- Case of Cysticercus J. C. Ortynsky—p. 1169

Bone Neoformation in Labyrinth—Tesar finds two types of new formed bone in the labyrinth. In nonsuppurative processes the bone remains spongy and never fills the endolymphatic space. Suppuration destroys the soft parts of the labyrinth and replaces them at last by compact bone tissue.

Acta Chirurgica Scandinavica, Stockholm

Supplement 5 1242 1924

- *Orthopedic Studies on Spastic Infantile Hemiplegia N. Silfverskiöld p. 1

Spastic Paralysis in Children—Of all the methods of treating infantile spastic hemiplegia, Silfverskiöld thinks that only operations to lengthen tendons and muscles or resect motor nerves have stood the test of time, but even these require long training in first analytic and then synthetic functional exercises. He gives the orthopedic literature on the subject and full histories of fourteen carefully studied cases to show the possible restoration of the earning capacity. The course of treatment need not take more than four months. Both monographs are in German.

Supplement 6 1280 1924

- *Staphylococcus Pyelitis J. Hellstrom—p. 1

Staphylococcus Pyelitis—Hellstrom appends a bibliography of 252 titles and discusses the chronic form of pyelitis in particular and especially the concretion formation for which the staphylococcus infection was evidently responsible. He found calculi in nine of the sixty cases. Acute staphylococcus pyelitis is generally mild, in his thirty cases the staphylococcus disappeared completely in twenty-nine and probably in all. It is important in treatment to be sure that not only the staphylococcus but also mixed colon bacillus infection has subsided before dismissing the patient as cured. The chronic cases were extremely refractory. Operative measures seemed to have as good a prognosis as with aseptic calculi.

Hygiea, Stockholm

80 385 416 (June 30) 1924

- *Renal Tuberculosis G. Ekehorn—p. 386 Begun p. 353
- Big Toe as Substitute for Thumb A. Troell—p. 407

Exposure of Kidney Before Removing Tuberculous Mate—Ekehorn gives the details of twenty-seven cases of tuberculosis of the kidney imposing nephrectomy in which conditions were so complicated and so far advanced that it was impossible to estimate the functional capacity of the other kidney without exploratory exposure. In twenty of the cases the second kidney was found dependable, and the contemplated nephrectomy was carried out with smooth recovery. The youngest in this group of twenty-seven was 8 years old, and twelve were under 20. Of the fifteen nephrectomized traced to date, six are in good health, free from pain and albuminuria the intervals up to twelve years. He does not open the exposed kidney but palpates it and the upper ureter as this shows tuberculous changes early, and he sutures the skin at once. The nephrectomy follows in the same sitting.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL 83, No 11

CHICAGO, ILLINOIS

SEPTEMBER 13, 1924

THE USE OF TRYPARSAMIDE IN THE TREATMENT OF GENERAL PARALYSIS

RESULTS OF THE FIRST YEAR'S EXPERIENCE *

FRANKLIN G EBAUGH, MD

AND

ROGER W DICKSON, MD

PHILADELPHIA

Most syphilographers and clinicians¹ have agreed that a new therapeutic approach is desirable in combating neurosyphilis, since the usual arsenicals and other drugs directed primarily from the spirocheticidal point of view are frequently ineffectual, owing to lack of penetrability of the central nervous system. In this therapeutic dilemma, it was natural that tryparsamide, as developed in the careful studies of Brown and Pearce,² should be immediately found of great value in establishing new principles of treatment. Tryparsamide has two remarkable properties: first, it increases the resistance of the individual by improving his general physical status, and, second, the high penetrability for nervous tissue which it possesses may, as stated by Pearce and Brown, increase the potential spirocheticidal action of the drug. Additional studies with tryparsamide by Voegtlin³ substantiate the results of Brown and Pearce in demonstrating the high penetrability of this drug for nervous tissue as compared to the arsphenamins. It is of interest that recent studies in inoculating general paralytic patients with the tertian malaria organism were of similar therapeutic indication, since increased resistance or increased immunity was produced through the resultant febrile reaction and leukocytosis. These reports⁴ from foreign observers are as optimistic as those of Lorenz,⁵ Moore and Keidel⁶ and

others who have used tryparsamide in the treatment of neurosyphilis.

In June, 1923, through the courtesy of Dr Brown and Dr Pearce of the Rockefeller Foundation of Medical Research, we began to use tryparsamide. At this time, we were not treating our cases of general paralysis in a routine manner, owing to a lack of success in previous experiences in a large state hospital, in which the usual methods of administering arsphenamin were employed unsuccessfully, including intracistern injections of arsphenaminized serum. The results of our work⁷ at that time led to pessimism as to the possibility of arresting the course of general paralysis and to considerable skepticism about later results obtained by workers with tryparsamide.

During the year 1922, 250 patients with general paralysis, fifty-two of whom were women, were admitted to the Philadelphia General Hospital psychopathic wards. In 1923, 218 patients, sixty-seven of whom were women, were admitted. This abundant material often represented failures of treatment in that many of these patients had received the usual anti-syphilitic treatment in the hands of private physicians or in outpatient clinics. We may for practical purposes divide this large group of material into three main classes: A, the organic group; B, organic reactions with psychoses of functional coloring; C, transitory psychoses without signs of deterioration.

A The Organic Group—Parenchymatous neurosyphilis in which the destruction of the central nervous system has proceeded beyond repair. These patients showed definite mental deterioration. In our psychopathic wards Group A, unfortunately, predominates. Tryparsamide was employed in a small percentage of these cases to check up on our clinical prognosis as well as to test tryparsamide as a therapeutic agent. Eleven previously committed patients of this type were treated.

B Organic Reactions with Psychoses of Functional Coloring—General paralysis in which therapy may possibly arrest the pathologic processes and restore the patient for either transient or permanent periods. Clinically, this group includes the psychoses simulating the functional disturbances seen in manic excitements with expansive delusions, in the depressions, and in other reaction types, in addition to the organic syndrome present in general paralysis. Approximately 20 per cent of the patients admitted came under this heading. The use of tryparsamide in the thirty-six cases of this type treated was of great interest and clinical import, as many of the patients had previously received arsphenamin treatment without success.

C Transitory Psychoses Without Signs of Deterioration—General paralysis in which the mental symptoms

* From the Neuropsychiatric Department Philadelphia General Hospital.

¹ Read before the Section on Nervous and Mental Diseases at the Seventy-fifth Annual Session of the American Medical Association, Chicago, June, 1924.

² This paper, together with those of Drs Loyd Thompson and W. I. Lillie, is part of a symposium on the treatment of neurosyphilis. The remaining papers by Drs J. E. Moore, H. M. Robinson, and R. S. Lyman, and by Drs H. C. Solomon and H. R. Viets, together with the discussion, will appear next week.

³ Voegtlin, H. C. Treatment of Neurosyphilis. *J. A. M. A.* 81: 1742 (Nov. 24) 1923.

⁴ Pearce, Louise. Studies on the Treatment of Human Trypanosomiasis with Tryparsamide. *J. Exper. Med. (Supplement)* 34: 1 (Dec. 1) 1921. Brown, W. H. and Pearce, Louise. Tryparsamide: Its Actions and Use. *J. A. M. A.* 82: 5 (Jan. 5) 1924.

⁵ Voegtlin, Carl, Smith, M. I., Dyer, H. and Thompson, J. W. Penetration of Arsenic Into the Cerebrospinal Fluid with Particular Reference to Treatment of Protozoal Infections of the Central Nervous System. *Pub. Health Rep.* 38: 1003 (May 11) 1923.

⁶ Wagner, Jauregg. The Treatment of General Paresis by Inoculation of Malaria. *J. Nerv. & Ment. Dis.* 55: 369 (May) 1922. Delgado, H. F. Treatment of General Paresis by Inoculation of Malaria. *J. Nerv. & Ment. Dis.* 55: 376 (May) 1922.

⁷ Lorenz, W. F., Loevenhart, A. S., Bleckwenn, W. J. and Hodges, F. J. Therapeutic Use of Tryparsamide in the Treatment of Neurosyphilis. *J. A. M. A.* 80: 1497 (May 26) 1923.

⁸ Moore, J. E., Robinson, H. M. and Keidel, A. Tryparsamide in the Treatment of Syphilis. *J. A. M. A.* 82: 528 (Feb. 16) 1924.

⁷ Ebaugh, F. G. The Treatment of General Paresis by the Intracistern Route. *Arch. Neurol. & Psychiat.* 7: 325-331 (March) 1922.

are frequently transitory and are exhibited before any signs of deterioration develop. In this group occur the delirious reactions and neurologically irritative phenomena, as seen in convulsive seizures, aphasic attacks and meningovascular and endarteritic upsets. Such patients are so few that their admission to the psychopathic ward was a rare occurrence. However, a small number of patients were admitted showing delirious reactions. Five cases were chosen for treatment.

quent progress notes regarding clinical and serologic changes following treatment.

Although mercuric salicylate was given in the first ten cases, this was discontinued owing to complaints from the patient concerning the pain of injection. At any rate, for the purposes of the investigation, it seemed advisable not to use both drugs in treatment in order that definite data could be obtained concerning the value of tryparsamide.

TABLE 1—Clinical and Serologic Summary of Ward Patients Treated*

Name	Age	Sex	Color	Clinical Grouping	Serologic Findings in Beginning		Serologic Findings June 1924	Present Condition
					Cell Count	Colloidal Gold Curve		
1 O A	33	♂	W	B Expansive	21	555554160	Gold 55555500 cells not made	Treatment continued neurorelapse
2 L A	47	♀	W	B Depressed	6	555554300	Gold 55555521 cells 4	Working irregularly
3 A B	31	♀	W	B Manic	20	555554300	Gold not made cells 1	Improved working
4 C B	29	♀	C	B Depressed	11	444411000	Gold 1122110000 blood negative	No improvement noted
5 M B	34	♀	W	B Expansive	10	5555542100	Gold not made cells 0	No improvement did not return to clinic
6 M B	38	♀	W	A Deteriorated	38	555554290	Gold 555553000 cells 4	Deterioration
7 J B	40	♀	W	A Deteriorated	56	5555550003	Gold 55555300 cells 4	Unimproved
8 J B	38	♀	W	B Expansive	11	444443111	Gold 233311000 cells 5	No improvement
9 S C	29	♀	C	C Delirious reaction	22	555555437	Gold 555551000 cells 1	Marked improvement working regularly
10 C C	30	♀	W	B Depressed	8	5555549211	Gold not made cell not made	Developed severe jaundice
11 J C	30	♀	W	A Deteriorated	24	555555211	Gold 443220000 cells 0	Unimproved developed mild jaundice
12 W C	30	♀	W	A Deteriorated	30	555555423	Gold 555555200 cells 4	Unimproved
13 F C	29	♀	W	C Delirious reaction	0	5555554310	Gold 555555121 cells 5	Improved working
14 R C	22	♂	W	A Deteriorated	37	555553900	Gold 444447000 cells 0	Unimproved
15 V DN	42	♀	W	B Manic reaction	18	5555552000	Gold 55555131000 cells 3	No change
16 L D	40	♀	W	A Deteriorated	1	4444431100	Gold 4444431100 cell 0	Unimproved
17 H D	52	♂	W	B Manic reaction (weak)	70	5555555143	Gold not made	Died bronchopneumonia
18 H F	47	♀	W	B paranoid	0	555555433	Gold 444444100 cell 1	Unimproved deported
19 H F	13	♀	W	A Juvenile	9	555555372	Gold 555555000 cells 0	Unimproved
20 W F	60	♀	W	B Depressed	13	4444110000	Gold 2233331000 cells 0	Working regularly
21 J F	12	♀	C	B Juvenile	310	555555441	Gold 4444431000 cells 0	Improving less
22 A F	44	♂	W	B Depressive reaction	40	5555551100	Gold 3444333110 cells 10	Treatment continued improving
23 F G	46	♂	W	B Depressive reaction with cardiovascular neurosis phillips	60	4555554111	Gold 2555552510 cells 8	No change
24 A G	46	♂	W	B Hypochondriacal	5	555555400	Gold not made	Unimproved
25 J H	48	♂	C	B Depressive reaction	2	444432100	Gold not made	Working regularly
26 W H	59	♂	W	B Expansive	67	5555553200	Gold not made	Died
27 D H	39	♀	W	B Depressed	10	55555411100	Gold 22132000 cells 0	Unimproved
28 W H	30	♂	W	B Expansive	6	5555555513	Gold 5555547100 cells 0	Working regularly
29 J L	36	♀	W	B Manic	77	444332000	Gold 222227000 cell 0	Working regularly
30 M L	40	♀	W	B Manic reaction	100	4222220000	Gold not made cell 0	Unimproved committed
31 W L	30	♂	W	C Delirious reaction with aphasia	20	55555542100	Gold 5555510000 cells 3	Working regularly averaging 50 a week
32 J Mc	30	♂	W	B Depressed	58	5555554321	Gold 555555001 cell 131	Neurorelapse
33 H M	32	♂	W	B Expansive	115	5555542000	Gold not made cells 0	Working regularly
34 A M	47	♂	W	A Deteriorated	10	555555514	Gold 555555500 cells 0	Deterioration
35 E O B	32	♂	W	B Laboparalysis expansive	20	555555211	Gold 5555553100 cells 3	Improving
36 E O B	21	♂	W	C Depressive reaction	50	5555547000	Gold 4455521000 cell 0	Working regularly
37 F R	38	♀	C	B Manic reaction	87	555555400	Gold 5555550000 cell 0	Unimproved
38 J R	35	♂	W	B Depressive reaction	19	5555554340	Gold 5555551100 cell 0	No change
39 G R	39	♂	W	B Expansive	11	5555551490	Gold 5555553210 cells 8	Unimproved beginning of optic atrophy
40 J S	47	♀	W	A Committed	60	55555531000	Gold not made cells 0	Unimproved
41 M S	38	♀	W	B Expansive	0	5555555544	Gold 555555471 cell 1	Discharged for rest period improved
42 A S	50	♀	W	B Expansive	28	555555327	Gold 555555300 cell 4	No change
43 J S	47	♀	W	B Depressed	79	5555554110	Gold 5555550000 cells 0	No improvement
44 C S	39	♀	C	B Depressed	50	5555555410	Gold 55555530000 cells 1	Discharged did not report to clinic
45 R S	40	♀	W	B Depressed	1	5555555504	Gold 444442000 cells 3	Discharged working regularly
46 S S	51	♀	W	B Expansive	20	55555551300	Gold 4444421000 cells 0	Improved working
47 R V H	30	♂	W	C Delirious reaction	3	55555432100	Gold 5555550000 cells 0	Improved working regularly 50 a week
48 C W	57	♂	C	A Deteriorated	199	555555410	Gold 4443211000 cells 1	Died terminal pneumonia
49 A W	24	♀	W	B Agitated	20	55555447211	Gold 2233331000 cells 2	Improved working regularly blood neg.
50 W W	41	♂	W	B Agitated	40	5555554710	Gold 5555543000 cells 0	No change
51 J W	48	♂	W	B Manic reaction	10	5555547100	Gold 5555550000 cells 5	Working regularly
52 F Y	48	♀	W	A Deteriorated	10	5555554710	Gold bloody fluid	No change

* Unless noted the blood and spinal fluid remain positive
† In this column ♂ indicates male ♀ female

TECHNIC OF TREATMENT

Tryparsamide was given intravenously in weekly doses of 3 gm (in a solution of 10 c c sterile distilled water) over a period of ten weeks. A rest period of eight weeks was instituted after each course of ten injections. Careful preliminary ophthalmologic studies were made in each case, and optic atrophy of any degree was ruled out. Routine laboratory studies, including blood chemistry and urine, were normal in each case. A weight chart was kept on each patient, as well as fre-

CLINICAL AND SEROLOGIC FINDINGS FOLLOWING TRYPARSAMIDE TREATMENT

The clinical results of tryparsamide are summarized in Table 1, and brief abstracts of the main facts in several cases are given. We define improvement in this group to mean that the patients have been discharged from the psychopathic wards and are working regularly and supporting themselves or their families. Included in our statistics are all the ward patients treated, including the eleven deteriorated cases in which no benefit was

expected. Fifteen have definitely improved according to the foregoing standards. Summarized in terms of our clinical, diagnostic and prognostic classification, the cases in which improvement was made are distributed as shown in Table 2.

As treatment continued, the ward patients showing definite improvement were discharged to the outpatient clinic following the organizing of a tryparsamide treatment day, when they continue to report at regular intervals.⁸ Only two patients have failed to report since being discharged from the ward. Many other patients with general paralysis also were treated in this outpatient

TABLE 2—Summary of Cases

	General Paralysis	Number Treated	Number Improved
Group A	Deteriorated cases	11	0
Group B	Organic psychoses with functional coloring	36	10
Group C	Transitory psychoses	5	5
Total		52	15

clinic when their condition was not severe enough to justify admission to the wards. They are therefore not included in this study, nor are the tabetic patients treated in other departments. The following cases are of interest as illustrating the typical findings and the course in the hospital of cases of the clinic grouping B.

REPORT OF CASES

CASE 28—W K, a man, aged 38, a patrolman, admitted to the hospital June 2, and discharged, Aug 8, 1923, had been very forgetful and irritable during the preceding year. He was sent to the hospital on account of memory defects and a recent tendency to become expansive. He said he was "the best man on the whole police force." On admission, he showed typical speech and writing defects, and tremors of the face. The pupils were unequal, irregular and fixed to light. Mentally he showed a tendency to expansion, marked memory discrepancies and judgment defects. Serologic examination showed the blood and fluid to be four plus, there were 48 cells, there was a heavy trace of globulin. The colloidal gold curve was 555555543.

The patient is now receiving his fourth course of tryparsamide weekly, and his associates and family notice no abnormality. His mental condition is normal, his speech is normal, and his writing is improved. There are no facial tremors. The weight curve, according to the accompanying chart, is fairly typical of the cases treated.

CASE 45—R S, a woman, aged 40, admitted to the hospital Sept 1, 1923, and discharged to the outpatient clinic October 30, had a typical case of general paralysis with depressive reaction of two months' duration. She had undergone a change in general character during the preceding year. At times she was agitated, restless, confused and very forgetful. The pupils were irregular and reacted to light. A facial tremor was present. Speech and writing defects were present. The reflexes were normal. The spinal fluid was positive in both antigens. The blood was negative in both antigens. There was an increase in globulin. The colloidal gold curve was 555555554.

The patient is now receiving her third course of tryparsamide. She performs her full household duties, and her husband notices nothing abnormal in her general behavior. The sensorium is clear. The latest serologic reports showed the spinal fluid positive in cholesterin antigen, and negative in Noguchi antigen. The colloidal gold curve was 4455442000, there were 3 cells, there was a faint trace of globulin.

CASE 30—M L, a woman aged 40, had a typical manic reaction. The patient was overactive and overproductive, violent and destructive. There were the typical neurologic findings of general paralysis.

She showed no improvement during seven months of treatment and was therefore committed after completing her second course of tryparsamide. She showed no gain in weight.

The following cases are of interest in illustrating the transitory psychotic group (C) along with a control case treated only with arsphenamin.

CASE 13—F C, a woman aged 25, admitted to the hospital, Feb 2, 1923, had a delirious reaction. This patient showed emotional instability with hallucinatory periods. She was completely disoriented, with a general loss of mental capacity and ability. The pupils were irregular and unequal, the right being larger than the left; they were fixed to light. There was a slight overflow facial tremor on emotional stimuli. The reflexes were overactive and equal. The Wassermann reaction was four plus, there were 79 cells present, there was a heavy trace of globulin. The colloidal gold curve was 5555555430.

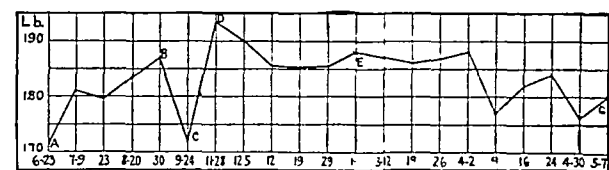
The patient was discharged, March 22, for arsphenamin treatment, and received twelve injections of neo-arsphenamin of 0.9 gm each with an extreme reaction following the injections. She had headaches, nausea and vomiting, and at times she was incapacitated for her work for several days. She was therefore transferred from the arsphenamin clinic to the tryparsamide clinic. She is now completing her second series of tryparsamide, and has never had any reactions to this drug. The patient has been working regularly in a department store as a clerk, earning \$14 a week. At times she is overemotional. The sensorium is clear, and by all her associates she is considered normal.

At present the colloidal gold curve is 5555555421, there are 5 cells. The spinal fluid Wassermann reaction remains positive.

CASE 31—W L, a man, aged 35, was admitted to the hospital, Jan 1, 1923, following a convulsive seizure with motor aphasia. He was treated with arsphenamin and discharged from the ward prematurely, February 25, to continue treatments with arsphenamin in the outpatient clinic. Here he received weekly injections of arsphenamin. He was unable to work. He had a return of his convulsions, and was irritable, antagonistic and abusive at home. He lost sexual power entirely.

He was readmitted to the ward, June 20, when he was placed on tryparsamide. He showed marked improvement following the first course of tryparsamide. He was discharged to the outpatient clinic, August 22. Since that time, he has been reporting regularly to the clinic. There has been a decided improvement in his general mental condition. He has been working regularly as an insurance agent during the last nine months and has been averaging an income of \$30 a week.

At present, the examination shows that the pupils react to light and in accommodation, there is a slight tremor of the face, there is speech defect. The writing defects are less marked. He is now entering his fourth course of treatment.



Weight in Case 28 during three series of treatments with tryparsamide. A beginning of first series B end of first series C, during rest period D beginning of second series E end of second series F beginning of third series G end of third series.

The serologic examination on admission revealed blood Wassermann reaction, positive, spinal fluid, positive 20 cells present. A heavy trace of globulin, colloidal gold curve, 5555542100.

At present the blood and spinal fluid are four plus in both antigens. There are 3 cells. There is a heavy trace of globulin. The colloidal gold curve is 5555410000.

This case is a very interesting one, as well as Case 13, since both patients derived very little benefit from arsphenamin. One patient showed a marked reaction incapacitating her for work, and the latter patient's

⁸ Ebaugh, F. G. and Dickson, R. W. Summary of Experiences with Tryparsamide Since June 1923. Tr. Philadelphia Psychiat. Soc., March 15, 1924.

mental condition made it necessary for him to be readmitted to the ward. Both patients have shown no reaction to tryparsamide and continue to report to the clinic at regular intervals.

CASE 9—S. C., a woman aged 25 admitted to the hospital, Oct. 10, 1923, and discharged, Jan. 30, 1924, three months previous to admission, had a convulsive seizure, immediately followed by a delirious reaction. On admission, the pupils reacted to light and in accommodation. The reflexes everywhere were overactive and equal. There was tremor of the face, and there were extended fingers. The spinal fluid and the blood were four plus in both antigens. There were 22 cells present. There was a heavy trace of globulin. The colloidal gold curve was 5555555432.

The patient is now completing her second course of tryparsamide. She is doing her household duties, working as a maid. The social service agency reports that her employer notices no abnormalities in her. The latest serologic reports are colloidal gold curve, 5555441000, spinal fluid, four plus, 1 cell, a heavy trace of globulin.

J. L., a man aged 25, admitted in a similar mental condition and with a history of convulsions, showed the findings of a typical case of general paralysis both clinically and serologically. There was a history of occasional convulsive attacks during the year previous to admission. Neurologically, the patient showed fixed, irregular pupils, there were facial tremors, left ptosis, and overactive and unequal reflexes greater on the left side. The Babinski reflex was present on the left side.

TABLE 3—Jaundice in Case 10*

	15 Minutes	One Hour	Two Hours
4/19/24	8%	10%	8%
4/26/24	13%	11%	11%
5/11/24	5%	5%	5%
Widal Hemoclastic			
7/250			
4/17/24 { 6850			
7500			
Urobilin positive			
Vanden Bergh indirect			
18675			
4/22/24 { 9000			
9900			

* Determined by Rosenthal's liver function test made by Dr. H. L. Bachus.

The patient was treated as a control case with neo-arsphenamin, 0.9 gm given at weekly intervals. His condition gradually grew worse, the convulsions continued, and mentally he showed evidence of advanced deterioration, making immediate commitment justifiable.

Clinically, the tendency of the patients to be expansive during treatment was very marked. In the ward, they talked freely concerning their treatment, and gave exaggerated statements concerning the improvement of their physical states. One patient referred her friends to the clinic for diagnosis and treatment.

The serologic results were interesting in that in all cases the cell count and the globulin fell within normal limits following the first course of injections. The gold curve tended to show less precipitation. The spinal fluid Wassermann reaction, however, remained unaltered in nearly every case. The blood Wassermann reaction changed as noted in Table 1 in one case (Case 4). The tendency toward fixity of the spinal fluid Wassermann reaction in Case 8 led us to treat three patients by means of intraspinal and, later, intracistern injections of tryparsamidized serum, prepared according to the Swift-Ellis technic. These cases, however, showed little change, although two patients have received ten such injections, the spinal fluid remained positive in each case. We plan to continue with intracistern injections in a large number of cases, in hopes of bringing about a more rapid change in the spinal Wassermann reaction.

We were agreeably surprised in the marked improvement in the physical condition of the entire group of patients treated. In two thirds of these cases, this consisted in a definite gain in weight, and an increased hematopoiesis as shown in increased hemoglobin and red blood cell counts. The accompanying chart of the weight of Case 28 is fairly characteristic.

UNTOWARD EFFECTS OF TRYPARSAMIDE

In the treatment of these patients, approximately 1,000 intravenous injections have been made, and the unfavorable results summarized as follows:

1. Jaundice developing after injections in two cases
2. Dermatitis in one case
3. Visual disturbances
4. The serious question of neurorelapse

The jaundice in the two cases occurred during the second course of injections. In Case 11 it was mild, and, after two weeks' rest, treatment was again instituted with no bad results. In Case 10, however, it was very severe with definite evidence of impairment of liver function as shown in the reports given in Table 3.

The dermatitis, in contrast to that seen after arsphenamin therapy, was certainly mild, and the patient has now completed a course of tryparsamide with no return of her skin condition. We feel that this finding is therefore of little clinical import.

Since tryparsamide has a selective affect for the optic tract and can never be used with any degree of optic atrophy, its universal use in general paralysis has been seriously impaired. To our surprise, routine ophthalmologic consultations have ruled out the therapeutic use of this drug in nearly one third of the cases selected for treatment. This was discouraging, since these patients frequently were considered otherwise favorable for treatment after complete clinical and serologic examinations. One case, in which the eyegrounds were reported normal at the beginning of treatment, after one course, developed definite visual difficulties, and, on later examinations, showed a beginning optic atrophy which, we fear, may be progressive. Several patients have told us of transient visual difficulties, complaining subjectively of blurring and seeing flashes of light. Treatment, however, was not discontinued except in the case described showing optic atrophy. Permanent amblyopia has not occurred.

However, the question of neurorelapse impresses us as being of extreme importance, and this paper would be of even greater optimism if two recent reactions following treatment had not been noted. Since they are both similar, the main facts of only one case need be discussed.

CASE 1—O. A., a man, aged 33 admitted to the hospital, March 7, 1924, following the second injection of tryparsamide, became delirious. He lost progressively in weight, and developed signs of meningeal irritation, rigidity of the neck, and a bilateral Kernig sign. He was incontinent of urine and feces, bed sores developed, and his condition was considered critical for several weeks. As this reaction began to wear off, he was again placed on tryparsamide, and, at the present time, has completed his first course. His weight is now slowly returning to normal, and the meningeal signs have disappeared entirely. During this flare-up, it is interesting to note that the general paralytic gold curve was longer than that present at the beginning of the treatment, with an increase in cell count.

The second patient is also apparently improving, and both are now returning to their previous physical and

mental condition with a rapidity that promises well for later improvement

The question of neurorelapse was also of interest in our deteriorated group. Patient 14 was observed steadily to become worse both mentally and physically, with an increase in the pleocytosis of the spinal fluid. During a course of injections, he lost considerably in weight, developed marked agitation and became violent and abusive. Extreme memory discrepancies became more marked. In the rest period, he returned to his former condition, and after three courses apparently shows a gain over his condition at the onset of the treatment. As in the use of other drugs, continued treatment may overcome this sudden neurorelapse. We have not encountered any really serious results of these reactions, although all types of severe cases of general paralysis have been treated. The two cases noted, however, cause us some anxiety.

COMMENT

One cannot help but be encouraged by the results obtained with the use of tryparsamide in the treatment of general paralysis. The fact that out of the fifty-two patients treated, fifteen are now working is most gratifying, especially as eleven of the fifty-two cases were deteriorated. During the year 1922, only five patients were discharged from the wards in good condition.

In comparison with the arsphenamins, tryparsamide has impressed us favorably, particularly in the comparative absence of reactions following administration. The arsphenamins, in our experience, frequently either alone or with spinal drainage may give negative serologic results without clinical improvement, whereas, tryparsamide frequently gives good clinical results, although the serologic changes are meager and transitory. Increased resistance or increased immunity of patients treated with tryparsamide is well shown in the improvement in general physical status and increased hematopoiesis.

The main contraindication for tryparsamide is brought up in the question of eyeground changes. One of our patients has definitely developed optic atrophy following the first course of tryparsamide. Further clinical data and neuro-ophthalmologic studies are needed. Data concerning the frequency of remissions are of equal import.

The question of neurorelapse impresses us as being a very important one, and we certainly do not wish to duplicate our recent experiences with two of the patients treated. However, as in arsphenamin therapy, the patients in whom these upsets occurred responded to further treatment. The frequency of reactions of this type in the further use of tryparsamide will prove of extreme clinical importance. One should not speak of a cure in neurosyphilis, and therapy is directed to arrest this disease before mental deterioration has developed.

Definite conclusions concerning these cases that have improved can only be given after a five-year interval. In the meantime, clinical, therapeutic and psychiatric studies must be made as well as critical control data obtained concerning the use of other drugs and methods. At present, we can definitely conclude that tryparsamide gives evidence of being the best drug so far advanced in the treatment of general paralysis. We do not feel that a general release of this drug should be made now, since many physicians would begin to use it in primary and secondary types of syphilis, in which it would prove to be valueless.

Thirty-Fourth and Pine streets

NEUROSYPHILIS SIX OR MORE YEARS AFTER TREATMENT*

LOYD THOMPSON M.D.

HOT SPRINGS, ARK.

The advent of the Swift-Ellis¹ technic of intraspinal therapy in 1912 served as a stimulus to the interest in neurosyphilis, and since that time a great many cases have been treated by this method and its various modifications. While the reports of the immediate effects of such treatment are numerous, few references can be found in which the late results of intraspinal therapy in neurosyphilis are recorded. It would seem, therefore, that an endeavor to check up these results would be of value.

The cases that form the basis of this report consist of clinic and private patients as well as a number of cases at the Army and Navy General Hospital, and were seen between Sept. 1, 1914, when I first began practice in Hot Springs, and July 1, 1917, when I left Hot Springs for army service. During this time, eighty-four patients with neurosyphilis were observed and given intraspinal therapy. Some of them were seen more than once, that is they returned to Hot Springs for treatment on one or more occasions subsequent to their original visit to me.

As the check up on these patients was begun in August, 1923, it will be seen that at least six years must have elapsed since the original visit of any of them, and in some instances as long a period as nine years. As none of these patients were residents of Hot Springs, it was exceedingly difficult, and in some instances impossible, to learn the late results of the treatment they had received. In fact, of the eighty-four cases treated, it was possible to determine the present status of but fifty-three. And while many of the remaining thirty-one cases were exceedingly interesting, this report will deal only with fifty-three cases. I recognize that this is a comparatively small number from which to draw any very definite conclusions, but the findings are recorded for what they are worth. Of the fifty-three cases, only three were seen personally since August, 1923, so it is apparent that the present status as recorded was obtained largely through letters from the relatives of the patients. The information regarding some of the cases was obtained from the patients themselves, and, in a few instances, from other physicians.

The types of neurosyphilis of the fifty-three patients were arteritis, three; meningitis, nine; tabes, twenty-three; general paralysis, eleven; taboparalysis, four; gumma of brain, two; gumma of spinal cord, one.

The treatment of all these cases was quite intensive, and consisted of from one to twenty-five intraspinal injections, from six to sixty intravenous injections of arsphenamin, and one or more courses of mercury, usually by intramuscular injection. The latter was quite variable, some patients receiving less than a dozen such injections, and some as many as a hundred or more. The intraspinal injections were for the most part made according to the Ogilvie² method, some were made by the Swift-Ellis¹ method, a few by Wile's³ method of injecting arsphenamin directly into the spinal canal after diluting with the aspirated spinal fluid, and a few by

* Read before the Section on Nervous and Mental Diseases at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

¹ Swift and Ellis. New York M. J. 38: 1446, 1912.

² Ogilvie, H. S. The Intraspinal Treatment of Syphilis of the Central Nervous System with Salvarsanized Serum of Standard Strength, J. A. M. A. 63: 1936 (Nov. 28) 1914.

³ Wile. J. Lab. & Clin. Med. 1: 119, 1915.

Byrnes'⁴ method of intraspinal injection of mercurialized serum

Those patients who received the large number of treatments were seen on several occasions, that is, their treatment was divided into several courses, from three months to a year apart. In most of the cases, not all of the treatment was given by me, but was partly given by the patients' home physicians after their visit to Hot Springs. Table 1 shows the present status of the fifty-three patients.

TABLE 1—Present Status of the Fifty-Three Patients

	Clinically and Serologically Well	Clinically Well	Progressive	Dead from Neurosyphilis	Dead from Other than Neurosyphilis
Arteritis	1	0	0	1	1
Meningitis	6	1	0	0	2
Tabes	1	2	8	8	4
General paralysis	0	0	1	8	2
Labor paralysis	0	0	0	4	0
Gumma of brain	0	0	0	1	1
Gumma of spinal cord	0	0	0	0	1
Total	8	3	9	22	11

It will be noted that, of the fifty-three patients only twenty are still living, eight being clinically and serologically well, and three clinically well. Of the other nine living patients, eight persons with tabes and one with general paralysis are reported to be "no better," "worse," etc. Of the thirty-three who are dead, it will be observed that twenty-two patients died of neurosyphilis and eleven of other causes. Three of the latter were suicides, and, in the case of another patient, the cause of death could not be determined. The one patient with arteritis who is still living was first seen in April, 1917, at which time he had a complete hemiplegia and aphasia of three days' standing. He gave a history of chancre of the finger two years previously, which had been followed by a slight rash. He had received six intravenous injections of arsphenamin and thirty injections of mercury during the following six weeks, but no antisypilitic treatment since. The onset of the hemiplegia had been quite sudden, with giddiness, nausea and stupor. As his blood Wassermann reaction was strongly positive, it was decided to start antisypilitic treatment at once. During the following two months, he was given eight intravenous and six intraspinal injections of arsphenamin, as well as forty-eight intramuscular injections of mercuric benzoate. During this time, the aphasia cleared up completely, and the hemiplegia improved so much that the patient was able to walk quite well with a cane. His spinal fluid, which in the beginning of his treatment had shown thirty-four lymphocytes per cubic millimeter and a strongly positive Wassermann reaction, now showed only six lymphocytes and a weakly positive Wassermann reaction, with 1 c c.

I did not see this patient again until November, 1920, but during this interval he had received four courses of treatment similar to the one I had given him. At this time he was both clinically and serologically well, with the exception of a slight limp, a sluggishness of the pupils and an increase in the knee jerks. In spite of these findings, I advised further treatment, and administered seven intravenous arsphenamin injections and thirty-six intramuscular injections of mercuric benzoate. I saw him again in December, 1922, at which time his

findings were practically the same as they had been in 1920, and I advised no further treatment at that time. In August, 1923, he wrote me that his condition had remained the same. This patient I consider clinically and serologically well.

All six patients with meningitis who are regarded as clinically and serologically well were seen in the early course of the disease, that is, during the first year following the chancre. The greatest number of intraspinal treatments received by any of these patients was twelve, and the smallest, one. However, they have all received several courses of intravenous and intramuscular therapy. Table 2 shows the treatment of these patients and the findings in the spinal fluid taken since August, 1923.

The patient with tabes who is clinically and serologically well is interesting from the fact that during his first visit to Hot Springs in December, 1914, he refused intraspinal therapy, and even a spinal puncture for diagnostic purposes. Furthermore, he received only three intravenous injections of arsphenamin and thirty mercury injections. At this time, a tentative diagnosis of tabes was made on the history of a chancre eight years previously, with only a few mercury injections and potassium iodid by mouth as treatment, presumably mild gastric crises, diminished knee jerks, and a positive blood Wassermann. This patient returned to Hot Springs in March 1915, with the gastric crises increased and this time submitted to intraspinal therapy. He was given eight such injections and a like number of intravenous arsphenamin injections. He insisted, however, on taking mercury injections instead of intramuscular injections.

The gastric crises were completely stopped by this treatment, and the spinal fluid became negative. I have not seen this patient since, but he has received several courses of intraspinal and intravenous therapy, and in December, 1923, wrote me that he was well and his spinal fluid was negative.

Of the three cases in which the patients are recorded as clinically well, the patient with meningitis was first seen in September, 1916. He was given eight intra-

TABLE 2—Treatment of Six Meningitis Patients

	Intraspinal Injections	Intravenous Injections	Intramuscular Injections	Present Spinal Fluid Findings
Case 1	6	31	Several courses	Negative
Case 2	4	2	Several courses	Negative
Case 3	1	48	Several courses	Negative
Case 4	11	3	Several courses	Negative
Case 5	12	Many total unknown	Several courses	Negative
Case 6	3	12	Several courses	Negative

spinal treatments and a like number of intravenous arsphenamin injections, with forty-two intramuscular injections of mercuric benzoate. Similar courses of treatment were given by his home physician in 1918, 1919 and 1920. He had no more treatment until March, 1924, when he again consulted me. At this time, he had no subjective symptoms, but his pupils were irregular in outline, and did not react to light and in accommodation. His spinal fluid showed a moderately positive Wassermann reaction, with 1 c c, a cell count of 21, and a colloidal gold curve of 4322210000. He was given six intraspinal injections, a like number of intravenous arsphenamin injections, and thirty intramuscular injections.

⁴ Byrnes, C. M. The Intradural Administration of Mercurialized Serum in the Treatment of Cerebrospinal Syphilis. J. A. M. A. 63: 2182 (Dec. 19) 1914.

tions of mercuric chlorid, which had only a slight influence on the spinal fluid

Neither one of the two patients with tabes who are recorded as clinically well had advanced very far in his disease when first seen, and they received quite similar courses of treatment, namely, about twenty intraspinal and thirty intravenous arsphenamin injections, and a great deal of mercury, both by injection and by inunction. Neither patient has been seen since his original visit, but each reports that he is feeling fine, although neither has had the spinal fluid examined recently.

Of the eight cases of tabes recorded as progressive, only one was seen more than once. This patient was examined in June, 1916, and given six intraspinal injections of mercurialized serum and thirty-two intramuscular injections of mercuric benzoate. I saw him again in the fall of 1918 in his home town in consultation with his home physician, at which time I advised further intraspinal therapy. Accordingly, his physician administered eight Swift-Ellis treatments. This was repeated in 1919 and in 1920. He again consulted me in Hot Springs in January, 1922. At this time he had a typical tabetic gait, although he walked without assistance. As he could remain in Hot Springs only a short time, I was able to give him but three intraspinal and five intravenous treatments. In December, 1923, his home physician wrote me that he had refused further intraspinal therapy and was gradually getting worse.

All the remaining seven patients have had some intraspinal therapy since being treated in that manner by me, but the reports from all of them have been most discouraging, two of them being unable to walk at all.

The one living patient with general paralysis is interesting in that he has received no antisyphilitic therapy since I gave him ten Swift-Ellis treatments in the fall of 1915. At this time, he improved mentally and serologically, and returned to his home, where he was able to resume some of his work as an orchardist. He continued with this work until the fall of 1920. It was not until the spring of 1922, however, that it was deemed advisable to place him in an institution. This was done, and a letter from the superintendent late in 1923 states that, while no antisyphilitic treatment had been administered, the patient remained practically the same both clinically and serologically. Spinal drainage was performed on three occasions, the spinal fluid being entirely negative, with the exception of a slight increase in the number of lymphocytes, twelve being the maximum.

Of the thirty-three patients who are now dead, it is not necessary to consider the eleven who died from causes other than neurosyphilis.

The one patient with arteritis died of cerebral hemorrhage three months after receiving five intraspinal and six intravenous arsphenamin injections, and about twenty-five intramuscular injections of mercuric benzoate.

Of the eight patients with tabes who are dead, only two received treatment which is comparable with that received by those who are living. However, these two patients were seen after the disease had progressed to the cane stage.

Seven of the twelve patients with general paralysis and taboparalysis who are dead had three or more courses of from six to eight intraspinal and intravenous arsphenamin injections, in addition to a great deal of mercury, but, in spite of this treatment, the disease, while apparently arrested at times, progressed to a fatal termination.

The patient with gumma of the brain died, according to his widow, during a convulsion two months after I had given him four intraspinal and eight intravenous injections of arsphenamin.

COMMENT

Eighty-four cases of neurosyphilis were treated by intraspinal as well as by other methods between Sept 1, 1914, and July 1, 1917. Of the eighty-four cases, the present status of but fifty-three could be determined, and of these patients but twenty are living and thirty-three are dead.

The best results were apparently obtained in the cases of meningitis, while the poorest results were obtained in the cases of general paralysis and taboparalysis.

The tabes patients who received the greatest amount of treatment, and who were seen fairly early in the course of the disease, responded quite encouragingly.

CONCLUSIONS

- 1 Intraspinal therapy is of value in neurosyphilis.
- 2 It should be given in connection with intravenous arsphenamin injections and mercury.
- 3 It should be given at periodic intervals as long as the patient remains clinically or serologically positive.

TRYPARSAMIDE TREATMENT OF SYPHILIS OF THE CENTRAL NERVOUS SYSTEM

OBSERVATIONS FROM AN OPHTHALMOLOGIC STANDPOINT *

WALTER I LILLIE, MD

ROCHESTER, MINN

A detailed, ophthalmologic study of the different types of syphilis of the central nervous system has been made in order to ascertain the ocular effects from tryparsamide treatment. The observations were instigated by the report of Pearce¹ that the only "untoward effects" of tryparsamide in the treatment of trypanosomiasis in human beings were ocular.

In order more readily to compare the ocular changes in untreated and treated syphilis, the cases were divided as follows: (1) ocular changes in untreated syphilis, (2) ocular changes in syphilis treated with arsenicals other than tryparsamide, and (3) ocular changes in syphilis treated with tryparsamide. Four cases included in these groups are not syphilitic in origin.

OCULAR CHANGES IN UNTREATED SYPHILIS

Wilbrand and Saenger² have found that the optic nerve may be directly attacked by syphilis, it alone becoming diseased. In other cases, the intracranial portion of the nerve suffers as a result of a gummatous meningitis in the form of a perineuritis with gummatous interstitial neuritis, which process descends as a simple perineuritis to the orbital part of the nerve. Alexander,³ in 1,385 cases of syphilis of the eye, found that

* From the Section on Ophthalmology, Mayo Clinic.

* Read before the Section on Nervous and Mental Diseases at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

¹ Pearce, Louise. Studies on the Treatment of Human Trypanosomiasis with Tryparsamide (the sodium salt of *n*-phenylglycineamide *p*-arsonic acid). *J. Exper. Med.* (supplement) 24: 1 (Dec.) 1921.

² Wilbrand, H. and Saenger, A. *Die Neurologie des Auges*. Wiesbaden, Bergmann, 5: 281, 1913.

³ Alexander, quoted by Wilbrand and Saenger. *Die Neurologie des Auges* 5: 281.

the optic nerve was diseased in 41 per cent. Badal⁴ found 21 per cent in 139 cases, in eighty-two cases there was atrophy, in sixteen, neuroretinitis, and in three, choked disks. Talbot,⁵ in his statistical researches on syphilis of the eye, found disease of the optic nerve in 14 per cent of 434 cases.

Progressive simple optic atrophy is coincident with tabes dorsalis, and occasionally with taboparalysis. As a rule, visual disturbance accompanies pallor of the optic disks, but Uththoff⁶ reports a case in which a typical functional visual disturbance did not arise until the disks had been pale for four years. Very rarely is the visual disturbance present without disk changes. Wilbrand and Saenger⁷ believe that slightly pale disks, as seen in persons with tabes dorsalis, may be due to individual structural peculiarities, simple anemia, or disturbed anlage, although true simple atrophy may develop later in such cases.

from behind forward, often only partially involving the pulvina. In 300 cases of general paralysis investigated by Marie,¹⁰ there were one of blindness without ophthalmoscopic findings, and two of right homonymous hemianopia. Quadrant hemianopia has also been reported. Marie believes that the prognosis of homonymous hemianopia due to syphilis is good if early treatment is instituted, and that a restitution of the vision results, as occurred in twelve cases. In four of these cases, there was permanent hemianopia, the optic tracts having been markedly injured. Uththoff¹¹ describes two types of field changes that often overlap. In one type, the whole nerve is early attacked by the disease process, and there is a more or less uniform loss of central, peripheral and color vision. Discrimination between red and green is lost early, but yellow and red are distinguishable longer. Often only the color vision is reduced, the peripheral vision being preserved, but

TABLE 1—Summary of Ocular Phenomena Previous to Treatment with Tryparsamide

CASES WITH PREVIOUS ARSENICAL TREATMENT																															
	Vision			Pupils		Reflexes		Ocular Movements			Fundl		Perimetric Fields						Color Blind												
	Cases	Normal	Diminished	Questionable	Normal	Unequal	Irregular	Normal	Argyll Robertson	Reduced to Light Accommodation	Normal	Normal	Nystagmus	Prosis	Paralysis	Normal	Pallor of Disks	Optic Atrophy	Chorioiditis	Choked Disks	Normal	Sector Defects	Hemianopia	Concentric Contraction	Color Contraction	Scotomas	Injunct Blind Spots	No Cooperation	Red green	Total Color	
General paralysis	27	23	3	1	14	9	4	12	6	8	1	26	0	0	1	24	0	0	0	0	0	0	0	0	0	0	1	0	1	0	
Juvenile general paralysis	2	1	0	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Tabes dorsalis	20	20	0	0	3	13	4	4	8	1	5	10	0	1	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Syphilis of central nervous system	44	36	8	0	21	17	6	23	6	13	2	41	0	0	0	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Hereditary syphilis	1	1	0	0	1	0	0	1	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
Lateral sclerosis	1	1	0	0	1	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Multiple sclerosis	1	0	1	0	0	0	1	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Erythema exudativum	1	1	0	0	1	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	97	81	12	2	42	40	15	41	21	24	8	103	0	1	1	8	2	1	2	1	0	2	0	2	11	1	2	1	1	0	
CASES WITHOUT PREVIOUS ARSENICAL TREATMENT																															
General paralysis	8	7	0	1	5	3	0	4	1	3	0	8	0	0	0	6	1	0	1	0	5	0	0	2	0	0	0	1	0	0	
Juvenile general paralysis	4	1	0	3	1	3	0	1	0	0	3	4	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
Tabes dorsalis	2	0	2	0	2	0	0	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
Syphilis of central nervous system	12	0	2	0	0	1	1	1	1	0	0	2	0	0	0	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0	
Multiple sclerosis	1	0	1	0	1	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	17	8	5	4	9	7	1	8	2	4	3	16	1	0	0	10	4	0	3	0	6	1	2	2	0	2	0	4	0	1	

Uththoff⁸ found homonymous hemianopia in eleven of 100 cases of cerebral syphilis. This is caused by the syphilitic degeneration of vessels, with hemorrhage, thrombosis, and softening of the cerebral substance, basal gummatous meningitis, and gummatous tumors of the optic tracts. The appearance of homonymous hemianopia in tabes dorsalis is to be regarded as due to a concurrent florid syphilis, or to arteriosclerosis. It is noticed in general paralysis as a late syphilitic phenomenon. Lissauer⁹ noted that in progressive paralysis localized, focal disease areas appeared and gave rise to paretic hemiplegias, monoplegias and hemianopias. He found degeneration of the ganglion cells of the primary optic ganglions, marked alteration of the interstitial structures, and degeneration of the fibers. The disease appeared to spread to the thalamus.

It contracts later. In the other type, the optic nerve is only partly affected, and the diseased parts show sharply demarcated field defects.

Behr's¹² contraindications for treatment for syphilis are (1) diminished central vision, loss of color vision with normal or almost normal form fields, (2) high grade concentric contraction both for form and colors, but with central vision normal, (3) transitory visual field disturbance, more in form than in colors, normal central vision, with well marked simple optic atrophy, and (4) subjective complaint of photopsia. (Von Hippel believes that Behr's list excludes most of the cases from treatment.) Ronne¹³ believes that color vision and visual acuity are supplied by the same nerve fibers and that a loss of a given number of fibers must lead to a proportional decrease in function. Disproportionality is explained by conduction resistance of the single fibers, which then are passable for only one of the two functions. Ronne found proportionality in stationary

⁴ Von Badal quoted by Wilbrand and Saenger. *Die Neurologie des Auges*, 5, 281.

⁵ Talbot quoted by Wilbrand and Saenger. *Die Neurologie des Auges*, 5, 281.

⁶ Uththoff quoted by von Hippel. *Graefes Saemisch Handbuch*, p. 433.

⁷ Wilbrand and Saenger quoted by von Hippel. *Graefes Saemisch Handbuch*, p. 434.

⁸ Uththoff quoted by Wilbrand and Saenger. *Die Neurologie des Auges*, 7, 172, 1917.

⁹ Lissauer quoted by Wilbrand and Saenger. *Die Neurologie des Auges*, 7, 186.

¹⁰ Marie quoted by Wilbrand and Saenger. *Die Neurologie des Auges*, 7, 187.

¹¹ Uththoff quoted by von Hippel. *Graefes Saemisch Handbuch*, p. 437.

¹² Behr quoted by von Hippel. *Graefes Saemisch Handbuch*, p. 478.

¹³ Ronne quoted by von Hippel. *Graefes Saemisch Handbuch*, p. 438.

neuritic atrophy as well as in slowly progressive tabetic atrophy, and he found disproportionality in rapid and malignant progressing atrophy. He believes that disproportionality is an especially unfavorable prognostic sign.

According to Uhthoff,¹⁴ the central scotoma with untouched peripheral fields, as seen in axial neuritis, practically never occurs in simple tabetic optic atrophy. Von Hippel¹⁵ asserts that before the central scotoma can be ascribed to tabes dorsalis, alcohol, tobacco poisoning, accessory nasal sinus disease and diabetes must be ruled out.

There were seventeen cases in this group, in one of which syphilis was not an etiologic factor. It is interesting to note that in about 50 per cent of the cases there were changes in vision, pupils, reflexes, fundi and perimetric fields. A relative central scotoma for form and color was found in one case of tabes dorsalis which, according to Uhthoff, seldom if ever occurs

cases, with marked improvement. Koch¹⁷ reported a large group of cases of blindness due to atoxyl in trypanosomiasis. Igersheimer¹⁸ describes the visual complaints in atoxyl poisoning as blurring vision, and dark spots before the eyes. The ophthalmoscopic picture is usually negative, and the visual disturbance, if any, is slight. In other cases, the disks are pale and the nasal fields contracted. At no time could a central scotoma be established, either early or late. Finally a few cases were seen in which the visual fields were contracted peripherally, the visual acuity was diminished, the pale disks became atrophic, and the pupils dilated and stiff. A few isolated cases with central scotomas have been reported by Rosenfeld,¹⁹ which were thought to be due to a chronic arsenic poisoning.

There were ninety-seven cases in this group, in three of which syphilis was not an etiologic factor. In 12 per cent there were visual changes, in 50 per cent pupils, and reflex disturbances, in 9 per cent fundus

TABLE 2—Ocular Complaints During Treatment with Tryparsamide

Case	Previous Treatment	Injections of Tryparsamide	Diagnosis	Vision		Fundi	Perimetric Fields	Course Under Treatment
				Right	Left			
1	Intensive	4	Syphilis of central nervous system	6/7	6/8	Normal	Irregular concentric contraction	Vision and fields decreased then improved
2	Moderate	5	Syphilis of central nervous system	6/5	6/5	Normal	Binasal type of concentric contraction	Fields decreased in size vision remained the same
3	Intensive	20	Syphilis of central nervous system	6/6	6/6	Old choroiditis each eye	Concentric contraction more in right eye	Subjective complaints no change in vision or fields
4	Moderate	7	General paralysis	6/10	6/10	Normal	Normal	Vision decreased to 6/15 each eye fields diminished to central fixation only
5	None	20	General paralysis	6/6	6/6	Normal	Concentric contraction more in right eye	Subjective complaints no change in vision or fields
6	None	10	General paralysis	6/7	6/7	Normal	Normal	Subjective complaints no change in vision or fields
7	Intensive	10	Syphilis of central nervous system	6/5	6/6	Normal	Binasal contraction for form and colors	Fields and vision decreased under treatment with arsphenamin to a central scotoma of left eye subjective complaints under treatment with tryparsamide but there was no change in vision or fields
8	Moderate	20	General paralysis	6/6	Glass	Old choroiditis lower periphery of right eye	Normal	Subjective complaints no change in vision or fields
9	Moderate	12	General paralysis	6/6	6/6	Normal	Normal for form contracted for green	Subjective complaints no change in vision or fields
10	Moderate	4	Syphilis of central nervous system	6/5	6/5	Normal	Normal	Subjective complaints no change in vision or fields
11	Intensive	4	Syphilis of central nervous system	6/30	6/30	Bilateral choked disk 4 to 5 diopters	Concentric contraction for form and colors blind spots enlarged	Vision improved to 6/10 choked disks receded to less than 1 diopter under arsphenamin subjective complaints with tryparsamide but no change in vision or fields
12	None	10	Multiple sclerosis	6/30	6/30	Retinal arteries contracted	Form normal colors contracted	Subjective complaints vision right eye improved to 6/10 fields did not change
13	Intensive	8	Syphilis of central nervous system	6/12	6/7	Slight pallor of right disk	Definite notching lower nasal quadrants both eyes	Vision decreased under tryparsamide

The other field changes were not of an unusual type. Most of the patients are now being treated either with arsphenamin or with tryparsamide and so far none have shown a decrease in vision or fields. In Table 1 are shown the changes found in the cases in this group.

OCULAR CHANGES IN SYPHILIS TREATED WITH ARSENICALS OTHER THAN TRYPARSAMIDE

It has been said that arsphenamin is neurotropic, but von Hippel found, by experimentation, that no injury to the optic nerve and retina was produced, and no clinical proof of the harmful action of the arsenic component of the drug has been demonstrated. In all cases in which fresh optic nerve inflammation arises after arsphenamin treatment, one has to deal with a provocative syphilitic process caused by the administration of insufficient dosage. This agrees with the findings of Benedict and O'Leary,¹⁶ who administered arsphenamin in both syphilitic and nonsyphilitic uveitis and retinitis

changes, and in 20 per cent perimetric field disturbances.

There were nine cases in which previous arsphenamin treatment had revealed visual and perimetric field defects. In four, the ocular changes became progressively worse (Cases 7, 14, 15 and 20), in two cases, there was considerable improvement (Cases 11 and 16), and in three there was no change in vision or fields (Cases 17, 21 and 23). In Case 7, the visual field became smaller and vision decreased during arsphenamin treatment, on account of a central scotoma of the left eye. In Case 14, the visual fields became progressively smaller during treatment with arsphenamin, but the visual acuity did not change. In Case 11, the vision improved and the choked disks receded, becoming practically normal during arsphenamin treatment. The visual fields remained the same, but the size of the blind spots returned to normal. In Case 16, the vision improved in both eyes during arsphenamin treatment, blindness in the left eye changed to 1/60. The visual fields improved from a temporal hemianopia

¹⁴ Uhthoff quoted by Wilbrand and Saenger. *Die Neurologie des Auges* 5: 288.

¹⁵ Von Hippel. E. Graefe Saemisch Handbuch. Berlin: Springer 1923 vii b, pp. 385 and 440.

¹⁶ Benedict W. L. and O'Leary, F. A. The Use of Antispecific Remedies in the Treatment of Diseases of the Uveal Tract. *Trans. Pacific Coast Oto Ophthal. Soc.* 1922 pp. 44-51.

¹⁷ Koch quoted by von Hippel. Graefe Saemisch Handbuch p. 379.

¹⁸ Igersheimer quoted by von Hippel. Graefe Saemisch Handbuch p. 379.

¹⁹ Rosenfeld quoted by von Hippel. Graefe Saemisch Handbuch p. 379.

in the right eye to an homonymous hemianopia, and finally a complete ring of vision with an absolute central scotoma in the left eye

OCULAR CHANGES IN SYPHILIS TREATED WITH TRYPARSAMIDE

Pearce¹ reports visual disturbances in certain advanced cases of trypanosomiasis in human beings which were related, apparently, to a too frequent administration of the drug. The condition was transitory in most instances, and resumption of treatment was not followed by a recurrence of the symptom. Lorenz²⁰ and others found that 40 per cent of their patients complained of dimness of vision. The condition was transient in all except two cases, in which the patients had abnormal eyegrounds before treatment. The authors emphasize the fact that tryparsamide possesses the potentiality of injuring the optic tract, and that it should not be used in cases with degenerative changes in the retina. Moore²¹ and others believe that optic

fields did not change. In four, there was a definite decrease in vision and perimetric fields. In Cases 7 and 11, there were subjective complaints, but no changes in the vision and fields beyond those already noted during the previous treatment with arsphenamin.

Four cases showed changes during treatment with tryparsamide. In Case 1, the vision in each eye decreased from 6/6 to 6/15 in both eyes. The fields were somewhat more contracted. When tryparsamide was discontinued, the fields and vision returned to normal. In Case 2, the perimetric fields decreased in size slightly during treatment, but the central vision remained the same. In Case 4, the vision and perimetric fields decreased considerably during tryparsamide treatment. Unfortunately, detailed perimetric fields were not obtained before treatment, although they were normal to a rough test. In Case 13, the vision decreased slightly during treatment, but the perimetric fields did not change.

TABLE 3—Ocular Changes Without Treatment with Tryparsamide

Case	Previous Treatment	Diagnosis	Vision		Fundus	Perimetric Fields	Course Under Treatment
			Right	Left			
14	Intensive	Syphilis of central nervous system	6/20	6/20	Pallor of disks	Bitemporal hemianopia with island of temporal vision in both eyes	Fields progressively decreased; vision remained the same
15	Intensive	Syphilis of central nervous system	6/30	6/15	Simple optic atrophy in both eyes	Concentric contraction with loss of red and green color vision	Fields progressively decreased; absolute central scotomas developed; became partial total color blind
16	Intensive	Syphilis of central nervous system	6/6	Nil	Pallor of disks with pericarditis	Temporal hemianopia of right eye; blind in left eye	Improved to a right homonymous hemianopia with ability to count fingers with left eye
17	Intensive	Syphilis of central nervous system	6/7	6/60	Pallor of disks	Left homonymous hemianopia	No change
18	None	Syphilis of central nervous system	6/7	6/1	Pallor of disks	Right normal; left nasal hemianopia involving macula	No change
19	None	Syphilis of central nervous system	6/6	6/1	Right normal; left pale disk; old choroiditis	Right normal; left nasal hemianopia involving macula	No change
20	Intensive	Syphilis of central nervous system	6/7	Nil	Pallor of disks	Right temporal hemianopia; left blind	Progressed to blindness in right eye in one week without any treatment
21	Intensive	Syphilis of central nervous system	6/5	6/5	Negative	Normal for form; colors contracted	No change
22	None	Syphilis of central nervous system	6/0	6/5	Right not seen; left normal	Right small area of vision; upper temporal quadrant; left normal	No change; secondary glaucoma with complicated cataract in right eye treated locally with relief of pain
23	Intensive	Syphilis of central nervous system	6/6	Nil	Mild neuritic atrophy in left eye	Right normal; left blind	No change

nerve involvement in neurosyphilis is an absolute contraindication for tryparsamide. In fourteen of 150 cases, dimness of vision was a complaint. In ten of these, the visual disturbance was slight, and cleared up when the treatment was discontinued. In one case, in which there had been neuroretinitis, a slight permanent visual defect resulted. In three, there were severe visual disturbances, with a marked residuum. The authors believe that the lesion produced by tryparsamide is apparently a toxic amblyopia due to a retrobulbar neuritis, and conclude that disease of the optic nerve or retina, particularly optic neuritis or neuroretinitis, or primary or secondary optic atrophy, should be rigidly excluded from treatment by tryparsamide.

There were 114 cases in this group, in thirteen of which visual disturbances occurred during treatment with tryparsamide. In nine, the complaints were subjective, such as blurred vision, flashes of light, and fatigue on close work, but the vision and perimetric

SUMMARY

The ocular findings in the 114 cases have been summarized in Table 1. The majority of the patients received a maximal dosage of 3 gm of tryparsamide intravenously, combined with 1 gram (0.06 gm) of mercuric salicylate intramuscularly at weekly intervals. Ten injections of each composed one course of treatment. One hundred and ten of the patients were syphilitic, four were not syphilitic. Seventeen patients, one of whom was not syphilitic, were not treated for syphilis, and before treatment with tryparsamide was instituted, about 50 per cent had changes in vision, pupils, reflexes, fundi and perimetric fields. From this it might be concluded that syphilis alone was responsible for these ocular changes. Ninety-seven patients, three of whom were not syphilitic, had been given arsenical treatment previously. Only 12 per cent of these patients had visual changes, 50 per cent had pupillary and reflex disturbances, 9 per cent had fundus changes, and 20 per cent had perimetric field changes. If these percentages are compared with those of the untreated cases, it must be concluded that arsenical treatment is very efficient in reducing the changes in vision, fundi and perimetric fields. The pupillary and reflex disturbances are

²⁰ Lorenz W F. The Treatment of Central Nervous System Syphilis with a New Arsenical. Wisconsin M J 20 336 337 1922. Lorenz W F. Loevenhart A S. Bleckwenn W J and Hodges F J. The Therapeutic Use of Tryparsamide in Neurosyphilis. J A M A 80 1497 (May 26) 1923.
²¹ Moore J E. Robinson H M and Keidel Albert. Tryparsamide in the Treatment of Syphilis. J A M A 82 528 535 (Feb 16) 1924.

of the same percentage in the two groups, which indicates that treatment does not affect the pupillary anomalies. In nine cases of visual and perimetric defects, four patients became progressively worse, two improved considerably, and three had no change of the vision or perimetric fields during arsenphenamin treatment.

In thirteen of the 114 cases, there were visual disturbances during treatment with tryparsamide. In four cases, the vision and fields definitely decreased, and in nine cases no visual or perimetric field changes could be demonstrated. In one case (Case 12), the vision in one eye improved during treatment with tryparsamide.

As soon as any change in the vision or fields could be demonstrated, treatment was stopped, the end-results cannot, therefore, be determined. However, a definite toxic effect of the drug was not demonstrated, as a central scotoma was not found in any case during the treatment with tryparsamide. In two cases (2 per cent), definite central scotoma developed during treatment with arsenphenamin (Cases 7 and 15). In one case (6 per cent), definite central scotoma developed without treatment for syphilis.

The treatment did not seem to influence the pathologic changes observed in the fundus. Visual and perimetric field changes occurred as often during treatment in cases in which the fundi were normal as in those in which they were not.

CONCLUSIONS

1 Changes in vision fundi and perimetric fields are much greater in cases of untreated syphilis of the central nervous system than in treated cases.

2 Pupillary and reflex changes are practically the same in treated and untreated cases of syphilis of the central nervous system.

3 Ocular changes occurred as often with arsenphenamin treatment as with tryparsamide treatment.

4 The use of tryparsamide is not contraindicated by pathologic changes in the fundus.

5 The arsenicals are apparently efficient in decreasing ocular changes in syphilis of the central nervous system.

6 In this select series of cases, tryparsamide was not more harmful to the eyes than any form of arsenic used in the treatment of syphilis of the central nervous system.

Sparganum Prolifer Infection—R. M. Marjoribanks and Elizabeth J. O. Le Sueur report what they believe to be the third case on record. The symptoms consisting of cough commencing with irritation on the left side of the throat had been present three months. Attacks appeared on alternate days during each two or three worms were coughed up. The patient, a Chinese student aged 22 was found to be well nourished. There was a slight bulging of the left sternomastoid muscle, below which a deeply lying tumor about twice the size of the thumb could be palpated. It extended from below the angle of the jaw to the larynx. Laryngoscopically the larynx was normal but a spongy patch could be detected below the left tonsil. This could be palpated with the forefinger, and bits removed were found to contain small *Sparganum* bodies. According to the patient's statement he had coughed up in all about 150 worms. These were found to vary in size from that of a pin's head to bodies measuring 8 by 6.5 mm. They were mostly bean shaped with prominences on one side. Some had distinct heads and tails and centrally situated prominences. A thin membrane limited the contents. When fresh the bodies were cream colored and of the consistency of soft cheese. Microscopically the contents were found to consist of a white granular material with food vacuoles and oily globules.—*The Royal Soc Med & Trop Hyg* 18:70 (March-May) 1924.

CERTAIN PROBLEMS IN THE TREATMENT OF DISEASES OF THE THYROID GLAND*

GEORGE W. CRILE, M.D.

CLEVELAND

The possibility and efficiency of the practical application of the administration of iodine for the prevention of goiter as a public health measure were definitely established by Marine and Kimball in their classical experiment in the public schools of Akron, Ohio, in 1917. As the result of that study, the application of this principle of goiter prevention has been extended to various endemic goiter districts in this country and abroad, so that today children in various parts of the world are being benefited by prophylactic treatment, and the incidence of goiter is by so much diminishing.

For a practical consideration of the problems of goiter, we may consider three abnormal states of the thyroid gland—hypothyroidism, malignancy and hyperthyroidism.

HYPOTHYROIDISM (SIMPLE GOITER)

The problems presented by simple goiter are comparatively easy of solution.

1 *Prevention*—I have already referred to the possibility and duty of preventing the incidence of simple goiter in the present generation by the administration of iodine throughout adolescence in the coming generation, by giving iodine to expectant mothers throughout the periods of pregnancy and lactation.

2 *Functional Deficiency*—In cases of functional deficiency in adults, the condition may be controlled by the supervised administration of some form of iodine, thyroxine or thyroid extract.

3 *Colloid Goiters and Diffuse Adenomas Causing Pressure Symptoms*—These should be excised. It should be emphasized that the administration of iodine to either adults or children will not remove fetal adenomas, but may produce hyperthyroidism—a condition identical with that associated with the so-called toxic adenoma which I regard, not as a clinical entity, but as one form of hyperthyroidism. This tendency of adenomas to produce hyperthyroidism, myocarditis and high blood pressure supplies a second reason for their removal.

Another reason for excising fetal adenomas is found in the results of studies by Allen Graham, who has found that in more than 90 per cent of cases of malignant tumors of the thyroid, the growths arose in fetal adenomas and that in a microscopic examination of all the fetal adenomas removed by my associates and me, whether or not malignancy was suspected, one in eight was found to be cancer.

My personal surgical experience, on which this discussion is based, includes 7,617 operations on the thyroid gland, this number including 2,809 thyroidectomies for hyperthyroidism, and 1,922 ligations.

MALIGNANT TUMORS OF THE THYROID

We have dealt surgically with 107 cases of malignant tumors of the thyroid gland. In 102 cases, thyroidectomy was performed for cure, in five cases, decompression only. Eighty-two of these patients have been traced, twenty-three of whom are living, five or more years after operation.

Read before the Section on Surgery, General and Abdominal at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

The prevention of cancer by the routine removal of fetal adenomas is on a par with the prevention of cancer by the removal of moles, scars, irritations and ulcer, and the repair of lacerations of the cervix. But even more brilliant than the prevention of cancer is the prevention of the fetal adenoma in the child by giving the mother iodine during pregnancy. That is, as has already been stated but should be emphasized again, cancer of the thyroid in the next generation can be prevented by giving iodine in this generation.

HYPERTHYROIDISM

At the outset, let us admit that we know of no specific pathologic basis for the syndrome that we designate as "hyperthyroidism." We have not sufficient information regarding the mechanism of the disease to argue regarding its pathology. We admit that there is no specific criterion whereby to establish the diagnosis in the borderline cases, that is, to determine at what stage altered function on the outer boundaries of normality ends and hyperthyroidism begins. Although we must admit these uncertainties, on the other hand in our series we have found no case of hyperthyroidism associated with a normal thyroid. We know that hyperfunction of the thyroid gland is an essential factor in the disease, and that, therefore, to secure maximum results in the treatment of hyperthyroidism, a sufficient amount of the gland must be resected at an early stage in the disease.

We believe that we now have sufficient data on which to base the judgment that, important as is the partial role of a rest cure, roentgen ray, radium, any form of iodine, thyroid extract, general medication, general hygienic regulation, the overcoming of autointoxication, the removal of focal infections, or dietary control in the treatment of this disease, no one of these measures, and not all combined, approach the certainty and efficiency of surgical treatment as the primary mode of attack, supplemented by the measures mentioned above. This conclusion is based not only on the immediate but also on the remote mortality, that is, on the expectancy of life no less than on the conservation of organic function and the general well-being of the individual. Surgical treatment, supplemented by whatever lesser means of attack are indicated in the individual case, not only conserves life and function but is of economic value also, viz., it is the shortest road to recovery.

The problem presented by the patient with hyperthyroidism is precisely the same as that which would be presented by a patient—and right now there are many such patients—who is taking thyroid extract or iodine in such amounts as to cause definite symptoms of hyperthyroidism. In the latter case, would it be best to control the racing heart and overworked myocardium by a rest cure, sedatives, digitalis, bromids, irradiation of the gland, diet, change of scene—by any or all of these lesser expedients—or would it be best first to stop the taking of the drug itself and then supplement the restoration by these valuable adjuncts?

In hyperthyroidism, the thyroid gland is the druggist, an extraordinary druggist, a tireless druggist, who day and night is manufacturing and turning into the circulation the exciting hormone.

To justify our conviction that surgical treatment is the central, the primary mode of attack against hyperthyroidism, it is essential to show that the immediate mortality is less than from the nonsurgical treatment, that the end-results are better. The mild cases may be excluded, for in these there is a negligible surgical risk. The crucial test is presented by the fully developed

case, which has reached the terminal stage characterized by emaciation, cardiac decompensation, swollen extremities, ascites, vomiting, acidosis and prostration—the case that is nearing final dissolution, or that shows repeated periods of, or continuous, delirium.

In such cases, the surgical problem is this: Is the state one of hopeless dissolution in which, even were it possible by a miracle to wish out the thyroid, death still would be inevitable? Can we differentiate between the quick or the dead? This, we have found, can be done almost with certainty by the application of a biologic test consisting in the following measures:

- 1 Restoration of the water equilibrium to the desiccated cells, by subcutaneous infusions of from 2,000 to 4,000 c.c. of one-third per cent procaine solution in twenty-four hours, after Bartlett's method.

- 2 Digitalization of the failing myocardium, whose feeble effort is not sufficient to assure the circulation of the blood in the essential organs—the myocardium, the brain, the liver, etc.—leaving these organs at this critical time in a state of relative anemia.

- 3 Increasing the blood volume—and oxygen carriers—by means of blood transfusion.

- 4 Modifying and controlling the ceaseless, exhausting restlessness and tension—physical and mental—by sedatives, and especially by the service of nurses fitted by natural endowment and by special training to assuage, cajole and quiet.

If, after this biologic test, consisting in these measures, has been applied, the downward course of the patient continues unchecked, as happens only in about one in 500 cases, then inevitable dissolution and death are before us.

On the other hand, and happily this is almost always the case, if the vomiting ceases and the delirium grows less and clears, then the patient is viable, and just as soon as the utmost value of the restorative program has been achieved—usually within a few days—a ligation of one pole is done in the patient's room, under local anesthesia alone or, in occasional cases, supplemented by nitrous-oxide analgesia. Usually, on the third day thereafter, the other pole is ligated and, a few days later, the patient is sent home for a period of hygienic control, the routine of which has been carefully prepared and written out for his daily guidance.

After from ten to twelve weeks, the margin of safety will be widened sufficiently to permit the resection of one or, usually, both lobes, after which the patient is again sent home to repeat the same hygienic program for a prolonged period.

By thus seizing and holding the initiative, the average length of time in the hospital before the ligations or thyroidectomy has been reduced to three and one-half days. In a recent analysis of the histories of 1,200 consecutive thyroidectomies, the average hospital pre-operative and postoperative periods covered six days.

In actual experience, we have found that in 1,415 consecutive ligations, the mortality has been 0.63 per cent, and the average reaction has been just a little less than that occasioned by the entrance to the hospital—thus, the mortality of ligations is almost exactly the same as the mortality attending admission to the hospital. That is to say, in general, whoever is able to go to the hospital at all survives the ligation. If he survives the first ligation, he the more certainly survives the second. If he survives both ligations, he almost certainly improves enough for a safe thyroidectomy. In other words, no diagnostic tests such as metabolism measurements are required, only sound judgment, biologic measures of

protection, and controlled technic are necessary for survival

After operation, every resource at our command is required to build up the final end-result

SUMMARY

Since the present plan of management has been carried out, there have been no deaths from so-called hyperthyroidism the occasional death—approximately one in 100—is due to some complication, e g heart failure, cerebral hemorrhage or pneumonia

Goiter is among the most preventable of diseases its treatment, in whatever form it presents itself, is accurately defined

1 Prevention is achieved by the administration of iodine throughout adolescence and pregnancy

2 Simple goiters should be excised if they cause pressure or are adenomatous

3 Malignant goiters should be excised if possible or they should be decompressed followed by radiation

4 For hypofunction the essential product that is lacking should be added

5 For hyperfunction the essential product that is overabundant should be diminished

Euclid Avenue at Ninety Third Street

CERTAIN BLOOD DYSCRASIAS DEPENDENT ON PATHOLOGIC CONDITIONS OF THE SPLEEN*

WILLIAM J MAYO MD

ROCHESTER MINN

The blood may be considered an organ consisting of cellular, colloid and crystalloid substances in a liquid medium, and the vascular system a means of transportation which carries these various substances to the tissues of the body and removes waste products The total volume of blood in the body of the average person is estimated by Mann¹ at from one thirteenth to one tenth of the body weight Krogh and Haldane² have shown that, in man at rest, each cavity of the heart expels about 4 liters of blood a minute During violent exertion, to supply the necessary amount of oxygen to the tissues, the entire volume of blood passes through the heart and around the body every ten seconds, and the amount expelled by the heart each minute is increased from 4 to 24 liters

The vital constituent of the blood is oxygen The supply of oxygen to the extremities can be cut off safely for several hours, but if the circulation of the blood through the central nervous system is stopped for more than from seven to ten minutes death ensues If there is shortage of oxygen from actual hemorrhage, the blood pressure drops, and the efforts of the heart and the respiratory system are increased in order to hasten oxygen to the tissues The rapid action of the circulatory and respiratory systems throws out the carbonates from the blood as in normal respiration, and the rapidity of respiration tends to exhaust them Seventy-five per cent of the body is composed of water Filling the veins with sodium chloride solution to increase the blood pressure in case of shortage of oxygen from

hemorrhage is of no benefit, for the red cell oxygen carriers are not increased, although their medium is diluted, nor is the blood volume materially increased, because the water will not stay in the blood vessels Transfusion of blood, which adds to the oxygen-carrying capacity, is indicated for serious hemorrhage and for anemia Just how much a single transfusion of blood will raise lowered blood pressure is still under discussion Taking the hemoglobin as an index, a reasonable transfusion of from 500 to 600 cc cannot be expected to raise the hemoglobin index more than from ten to twenty points Repeated small transfusions, on the whole, give better results than a single large one, provided the first transfusion is sufficient to maintain life

If the cause of oxygen shortage is overexertion, the sudden failure of the mechanisms of circulation and respiration, as in acute dilatation of the heart, and the rapid elimination of the carbonates which accompanies fatigue, tend to produce acute acidosis and failure to eliminate the products of combustion In such cases there are plenty of oxygen carriers but, temporarily, too little oxygen and too little carbonate, which prevents the transformation of the accumulated waste into carbon dioxide Transfusions of blood would be harmful, but phlebotomy may be indicated to relieve the circulation and prevent a breakdown of the transportation system

Forty-seven per cent of the known earth, including atmosphere and water, is composed of oxygen Considering how vital and immediately necessary oxygen is to animal life, it is surprising that there is no storage capacity in the body, either for oxygen or for substances which, under stress, would produce it

If the process of circulation is studied in detail, it is apparent that the red cell transports oxygen from the lungs to the tissues of the body, and on its return for a fresh supply of oxygen aids the blood plasma in carrying carbon dioxide to the lungs for exhalation The red cells also act as carriers of vital molecular substances to the tissues Hemoglobin is the most important of these substances containing one atom of iron to the molecule Anything which reduces the number of the red cells, whether actual blood loss or those various agents, infectious and otherwise, which produce secondary types of anemia, either through destruction of red cells or the production of toxic substances which prevent their formation or their function, is a serious menace to life and health

SPLENIC ANEMIA

The spleen, in the adult, like other organs of the reticulo-endothelial system, has for one of its proper functions the destruction of deteriorated red cells When the spleen is enlarged, as from splenic anemia or hemolytic icterus, this destruction may become excessive and produce the chronic anemia that leads to death, directly, or indirectly through intercurrent disease

The term "splenic anemia" in itself indicates a syndrome of many causes, and not an entity In the ninety-eight cases in the Mayo Clinic in which the spleen was removed for splenic anemia, micro-organisms were not secured on culture, yet the spleen, revealing interiorly the enormous development of a protective type of fibrous tissue, thrombophlebitis, and atrophy of the pulp cells, and exteriorly the adhesions that bind it to the surrounding organs, gave the impression that the disease is the result of infection by bacteria which are short-lived and have disappeared or, one might better say, have been destroyed Experience leads us to believe that when a pathologic process in the spleen is once set

* Read before the Section on Surgery, General and Abdominal at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924

¹ Mann F G Shock and Hemorrhage An Experimental Study Surg Gynec & Obst 21 430-441 1915

² Krogh and Haldane quoted by Starling E H The Wisdom of the Body Lancet 2 865 (Oct 20) 1923

in motion, even if the cause of the hyperactivity is overcome, there is a tendency for the condition to become chronic, and its later progress is little influenced by any form of conservative treatment.

In the later stages of splenic anemia, the liver is often involved in the portal cirrhosis described by Banti. Removal of the spleen in such cases not only may be life-saving, but restores the patient to usefulness. The liver may be involved in the cirrhotic process, and circulatory obstructions due to the deposit of connective tissue around the portal vessels in the liver may cause ascites, hemorrhages from the stomach, and so forth, yet the majority of patients, even those in the terminal stage of the disease, may be restored to a condition closely resembling normal health. However, about 13 per cent of patients with advanced disease who have had hemorrhages before splenectomy may have hemorrhage after splenectomy which acts as a contributory cause of death, at some time within the next ten years.

The operative death rate in cases of splenic anemia depends largely on the cases accepted for operation. A mortality of 10 per cent almost entirely confined to patients in the terminal stages of the disease, when the liver as well as the spleen is involved, may be expected and, I believe, is justified. One cannot refuse to operate on these bad risks, since, even in terminal cases, a large number of patients recover and live for years. Studies of hepatic function before operation will eliminate some of the operative fatalities.

The splenomegalia of syphilis, because it is due to a resistant protozoan which can be detected in the tissues of the spleen, has been split off from the splenic anemia group, although the essential gross pathologic condition, excluding for the moment the gumma and the spirochetes, is quite the same as in other forms of splenic anemia for which a cause has not yet been found. Nine patients with what might be called syphilitic, splenic anemia were splenectomized in the clinic. All the patients were in advanced stages of syphilis and had been thoroughly treated without cure, several had gumma in the liver as well as in the spleen. One patient died in the hospital, eight were cured, all evidences of the syphilis and the anemia disappearing in the course of a few weeks, with little or no after-treatment.

HEMOLYTIC ICTERUS A SYNDROME

The cause of hemolytic icterus is not known, but, as pointed out by Elliott and Kanavel,³ it is known that the enlarged spleen is the active agent in the destruction of red cells. Hemolytic icterus is the result of a splenomegalia, which affects chiefly the red blood cell, and is of two types—that described by Minkowski⁴ as congenital or familial, and that described by Hayem⁵ and by Widal⁶ as acquired. The congenital or familial type may occur in several members of the same family, and perhaps for several generations. The patient, possibly from birth or early childhood, is jaundiced, has an enlarged spleen and an enlarged liver, and is subject to sudden so-called crises in which there is a temporary increase in the size of the spleen and liver, and an increase of the jaundice, fever and malaise, which lasts

for a number of days and gradually merges into the usual condition of more or less chronic icterus. In every community are to be seen persons with so-called chronic biliousness of this description, some of whom may live to the fifth or sixth decade. Usually, death results from anemia or intercurrent disease in early life. Sections removed from the liver reveal more or less hyperplasia, and it may be that the enlargement in both the spleen and the liver is to some extent work hypertrophy. The acquired type of hemolytic icterus comes on later in life, often in the adolescent period, pursues a more rapid course, and, as a rule, in the course of a few years ends in death from anemia or intercurrent disease. The outstanding feature of hemolytic icterus is the fact that the jaundice is not obstructive. The stools are normal in color, and there is no bile in the urine. Experience in the Mayo Clinic shows that 60 per cent of the patients, even the very young, have coincident pigment gallstones, the result of the enormous number of destroyed red corpuscles, the pigment of which forms the main source of the pigment of the bile. The gallstones sometimes cause biliary duct infection, which accounts for the occasional occurrence of a confusing obstructive jaundice in the patient with hemolytic icterus.

The spleen has been removed in the Mayo Clinic in fifty-one cases of hemolytic icterus, with three deaths in the hospital, only one of which was directly connected with the operation. The results of splenectomy in this disease are little short of marvelous. The patient, perhaps jaundiced through life, becomes white in a few days, the anemia disappears quickly, and health is restored and maintained.

Following Eppinger's suggestion that the spleen might be an active agent in destroying the red cells in cases of primary anemia, splenectomy was quite generally performed in cases of pernicious anemia, but the failures to secure prolonged improvement were numerous, and the fact that the operation was not free from risk soon brought splenectomy into disrepute. The pathologic condition of the spleens removed did not show direct connection between the spleen and pernicious anemia.

Splenectomy was performed in the Mayo Clinic in sixty-one cases of pernicious anemia, with three deaths in the first nineteen cases, in which operation was performed during the terminal stages of the disease without due preparation. In the forty-two cases in which splenectomy has been performed since then, the patients have been prepared by blood transfusion, and there have been no deaths. Splenectomy should not be performed while patients are in crisis, that is, during the more active manifestations of the disease. All the patients who recovered from the operation were strikingly benefited at once, the benefit was much greater than had resulted from transfusion of blood or any other form of treatment. About 22 per cent of the patients lived two and one half times as long as those in a comparable group who were not splenectomized, and about 10 per cent lived more than five years and were able to work. If this extension of life is compared with the life expectancy of two years which is accorded the average patient under any other form of treatment, the results are not wholly discouraging. Perhaps we have expected too much, and our prejudice against operation has blinded us to what has actually been accomplished. In the aplastic types of pernicious anemia, especially in elderly patients and in poor subjects for operation, the relief gained from operation is not worth the risk, but for

³ Elliott C. A. and Kanavel A. B. Splenectomy for Hemolytic Icterus. *Surg. Gynec. & Obst.* 21: 2137, 1915.

⁴ Minkowski O. Ueber eine hereditäre unter dem Bilde eines chronischen Icterus mit Urobilinurie Splenomegalie und Nierensiderosis verlaufenden Affection. *Verhandl. d. Kongr. inn. Med.* 18: 316, 1900.

⁵ Hayem G. Sur un variéte particuliere d'ictère chronique, ictère infectieux chronique spléno-mégalique. *Presse med.* 1: 121, 1898. Nouvelle contribution à l'étude de l'ictère infectieux chronique spléno-mégalique. *Bull. et mem. Soc. med. d. hop. de Paris* 25: 122, 1908.

⁶ Widal A. and Brule. Differentiation de plusieurs types d'ictères hémolytiques. *Presse med.* 1907, pp. 641-644, quoted by Elliott and Kanavel (Footnote 3).

patients with the more chronic types of the disease who are otherwise good subjects for operation, and for younger patients, the operation should be considered. Splenectomy in such cases is comparatively safe.

POLYCYTHEMIA RUBRA

Another red cell syndrome of which little is known is polycythemia rubra vera described first by Vasquez, and later by Osler. In this malady the spleen and, usually, the liver are enlarged. The hemoglobin ranges from 100 to 130, and the red cells from 6,000,000 to 14,000,000. The patients become exhausted gradually, often suffer from hemorrhages of the stomach, and seldom reach middle life. Postmortem examination reveals specific lesions. It has been believed that the spleen is only an incident in the disease, but a typical case is on record in the clinic of a physician, aged 28, who was promptly restored to health by removal of the spleen and has remained well for more than two years. This one case, however, is only of suggestive value.

Besides its effect on the red cells, the diseased spleen exerts a destructive influence on the blood platelets, an action that is little understood. The normal range of blood platelets varies from 225,000 to 300,000. When the platelets are reduced to less than 40,000 although the blood clots, the bleeding time is dangerously increased, this is the condition in the purpuras. The only known method of supplying blood platelets is by transfusions of blood. In the acute toxic forms of purpura that are accompanied by a reduction in blood platelets to a proportion as low as 10,000, repeated blood transfusions in certain cases are the most effective remedy. There is a chronic type of purpura, coming on often at the adolescent period which leads to death. The patient suffers from hemorrhage under the skin in the stomach and from the nose, and the female, from exhausting menorrhagia. The disease is progressive, with periods of temporary betterment especially as a result of blood transfusion. The spleen is always enlarged. It certainly seems foolhardy to perform splenectomy if the patient has a bleeding time of fifty-five minutes, but experience has shown that the removal of the spleen under such circumstances results in the most extraordinary benefit. The patient gets well and remains well. In seventy-two hours, possibly the blood platelets may increase from less than 40,000 to 700,000. We have removed the spleen from four patients with chronic purpura. Two were women, one aged 30 and one 20, who were cured immediately, one was a girl, aged 11 years, and one was a man, aged 21. In the course of a few days, the patients were apparently restored to health.

The relation of the spleen to the production of white blood cells is well understood, but not so its relation to the pathologic condition of the white cells. Hematology is one of the newer sciences. The clinician has rightly been conservative in accepting unsupported laboratory findings, but a study of these findings in the light of the clinical facts has gradually brought order out of chaos. The surgeon today is influenced greatly in deciding on the surgical treatment of an acute infection by the upward or downward progression of the white cell count, and has learned that differentiation of the white cells of itself brings out important clinical facts.

It is not altogether fanciful to regard the white cell as the original blood cell. The blood of the invertebrate is white blood. The first blood in the fetus is white blood, and the assumption that the red blood is a descendant of the white blood is tenable. In the chronic types of leukemia, the white cell count runs high.

SPLENOMYELOGENOUS LEUKEMIA

Splenomyelogenous leukemia, as its name implies, is more concerned with the spleen than any of the other forms of leukemia. It is well known that any method of treating the disease, such as by radium, which will reduce the size of the spleen, will reduce also the number of white corpuscles, and coincidentally improve the anemia and the general condition of the patient. It has been one of the traditions in medicine that a patient with splenomyelogenous leukemia from whom the spleen is removed will die from the operation.

My first experience with splenectomy in this disease was in a case in which a man had been examined, and treated for splenomyelogenous leukemia, in two of the largest hospitals in the country, in one for six months and in the other for four months. I removed the spleen, believing that the condition might be some obscure form of splenic anemia. The patient's blood did not become normal and he was never strong, but at least he was alive, when last heard from, seven and one-half years following operation. I hesitate to record this as a case of splenomyelogenous leukemia, since it was observed in the early days, when accurate differentiation was difficult. I have found that difficulty in diagnostic differentiation occurs much oftener at the bedside than in the textbooks.

The second patient on whom I performed splenectomy for splenomyelogenous leukemia was a woman, aged about 40 who had suffered from the disease for more than two years. She had been treated by roentgen ray, which was then just coming into use, and the usual number of unavailing internal remedies. True to form in such cases, irradiation eventually failed to do more than temporarily check the course of the disease. Ten days after splenectomy, the white cell count had dropped from over 300,000 to below 40,000, but it never became normal. The patient improved steadily, lived for approximately two and one-half years, and then died from intercurrent disease.

At about this time the use of the roentgen ray, and radium especially, was begun in the Mayo Clinic in the treatment of splenomyelogenous leukemia. In thirty-one cases, following the preliminary irradiation, which rapidly reduced the size of the spleen, splenectomy was performed. One patient died on the fourteenth day from accidental pulmonary embolism. Radium applied to the spleen reduces not only its size temporarily, but also the white cells. In one of our cases after irradiation the white cells dropped from 500,000 to 3500 before operation, but the drop was accompanied by toxic symptoms. We are now quite satisfied to reduce the white cells by radium to the vicinity of 30,000 before operation. Radium is of value in the treatment of splenomyelogenous leukemia, but it does not cure and finally loses its good effect by producing connective tissue changes in the outer layers of the spleen, which encapsulate and protect the interior pathologic tissue from the rays.

In tracing patients splenectomized for splenomyelogenous leukemia, we found three who have been sufficiently free from the effects of the disease to carry on their work for a period of more than five years, and eight for more than three years. Others have had periods of temporary improvement of from one to two years, but all still show evidences of the disease. The operation of splenectomy in these cases is relatively simple, provided the patients have not had repeated and prolonged roentgen-ray or radium treatment, and I believe that in the more chronic cases, after due prepara-

tion by radium, splenectomy is worth while in selected cases

CONCLUSION

In the light of clinical experience, the chronically enlarged spleen must be regarded as a menace to the well-being of its human carrier, and it rests with the physician to show why it should not be removed.

Besides the 255 cases of splenectomy referred to here the spleen has been removed in the Mayo Clinic in ninety-three cases of splenomegalies due to micro-organisms, tumors and other conditions.⁷

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS CRILE AND MAYO

PROF. A. J. CARLSON, Chicago. I was surprised to hear Dr. Crile say that in goiter districts we should confine the giving of iodine to expectant mothers and to boys and girls at adolescence. Since the prevalence of simple goiter in certain regions seems to be associated with too little iodine in the water and food, the supplying of that iodine would seem to be useful to all people in all states of life. I am not aware that there is any higher incidence of "toxic" goiter nearer the seashore, where the supply of iodine is supposed to be physiologic. I question whether, at present, the term "fetal adenoma" is not begging the question. If we follow the thyroid gland from the fetus on, in what respect or at what stage can any one tell the difference in the gland or part of the gland that later develops into adenoma? Is it not true that almost any thyroid almost at any time may develop an adenoma, depending on some conditions that we do not know? Dare we assume that a "fetal adenoma" is the result of "orthogenesis," irrespective of fortuitous conditions after birth? The perennial discussion between internists and surgeons as to whether or not the toxic goiters should be excised seems to get us nowhere. Both internists and surgeons present what looks like good batting averages when each tell their own story. But let us give more attention to etiology and prevention, since a cure by either medicine or surgery is an uncertainty. Dr. Hektoen and I have developed a direct method of studying the thyroid hormone (thyroglobulin) in blood and lymph. We find it in the thyroid lymph and thyroid vein blood in dogs. So far we have been unable to secure consistent evidence that the thyroid nerves increase or decrease the output of the thyroid hormone from the thyroid gland, but the work is not complete. I have also tried to determine in a more direct way whether Kendall's thyrotoxin really is the thyroid hormone. We have injected thyrotoxin into absolute cretin rabbits to see whether the administration of thyrotoxin in absolute cretinism can take the place of thyroid or thyroid extract. This seems to us necessary, since in practically no case of cretinism and myxedema in man can we be sure of absolute athyroidism. One particular thing that occurred in our cretins treated for a long time with thyrotoxin intravenously was the development of extreme arteriosclerosis. It would be premature to say now that thyrotoxin produces arteriosclerosis. The problem is complex. Protein split products in the material rather than the thyrotoxin may be responsible for the injury to the blood vessels. We do not usually class the spleen with the organs of internal secretion because evidence of hormone production in this organ is practically lacking. But, as in the case of many other organs, the physiologic light is coming largely from the clinical and the pathologic work rather than from experiments on normal animals. It is remarkable that the removal of the spleen in otherwise healthy animals produces practically no effect except a slight temporary anemia, contrary to what we would expect if the spleen is an important organ for destruction of red cells or if it produces some stimulant to the red bone marrow. It is well known that splenectomy usually results in improvement of the anemia in the so-called splenic anemia. Now Dr. Mayo reports improvement following splenectomy in the condition of

polycythemia, the very opposite of anemia, and, still more remarkable, a distinct improvement in longevity, erythrocyte count and other clinical conditions in pernicious anemia, a disease, so far as our information goes, largely due to malfunction of the red bone marrow. These are points that we could not have guessed at, nor could they have been produced by experiments on normal animals. Apparently the spleen in some people is a Janus, now producing anemia, now polycythemia. Attempts have been made for years to improve pernicious anemia by the administration of spleen extracts, on the theory that the spleen produces something that stimulates the red bone marrow to the production of red cells. The results have been more than discouraging. Is it possible that pernicious anemia is merely the result of an hyperactive spleen?

DR. J. L. YATES, Milwaukee. What do these glands contribute or fail to contribute to resistance and defense which determines susceptibility to and recoverability from all diseases? Diseases are conflicts within living hosts between offense, initiating and disseminating irritations, and defense, focal and somatic reactions. Therapeutics includes two factors—reduction of irritation and augmentation of defense. Interest centers in augmenting defense by manipulating thyroid and spleen. Dr. Carlson said that too little is known about the hypophysis to consider it. Defense, Child has shown, varies with rates of oxidative metabolism. It consists of native tissue resistance reinforced by protection delivered in the blood. Protection includes an increase in normal formed and unformed blood elements plus antibodies, opsonins and the like, provoked by irritants. All are products of increased cell activities. Dr. Crile emphasized thyroid control of rates of somatic metabolism. Our medical forefathers believed in potassium iodide as an alterative. Apparently, administration of iodine increases resistance, not as an alterative, but, as Marine has shown, iodine aids thyroid to functionate. Four functions may be ascribed to the spleen: (1) participation in destruction of erythrocytes, (2) fabrication, possibly from destroyed erythrocytes, of a hormone, which, activated by liver, stimulates hematopoiesis in bone marrow, (3) formation of endotheliocytes and lymphocytes, and (4) elaboration of protective substances. The first two explain why splenectomy benefits patients suffering from hypersplenism (hemolytic jaundice) and hyposplenism (polycythemia, splenic anemia). Leike has demonstrated the efficacy of administration by mouth of extracts of spleen and bone marrow in secondary anemia. It is harmful in primary anemias because bone marrow is already exhausted. I believe that some benefits of splenectomy are unappreciated. Dr. Mayo referred to types of syphilis simulating splenic anemia and the improvement subsequent to splenectomy. Certain types of Hodgkin's disease and cancer progress so gradually that resistance is dissipated without being stimulated to the overactivity essential to recovery. If timely splenectomy be performed on suitable patients, compensatory overactivities in liver, lymph glands and bone marrow afford an effective amount of resistance otherwise unobtainable. First suggestions of correlated influence of thyroid and spleen on defense came from Bardeleben (1844) who held that life was impossible after removal of the thyroid and the spleen. Limited personal observations on rabbits and dogs after excision of both spleen and thyroid indicate that resistance to infection is reduced and that prolonged life, especially in carnivora, is exceptional.

DR. W. D. HAGGARD, Nashville, Tenn. Dr. Crile has described the extreme condition in which patients with exophthalmic goiter may find themselves. Many of them are almost moribund, and anything done to them surgically almost kills them. What is the matter with those patients? We have had a great many theories to explain the phenomenon of the exophthalmic goiter syndrome. It is something that renders them very desperate. Kendall has come closer to it than any one else, in that he has shown that in the molecule of thyroxine there is a deficiency in the atom of iodine. We knew for a very long time that all the iodine in the body was handled by the thyroid gland, and the lack of this iodine atom seems to be the essential thing in producing this disease. It is almost, in a sense, an iodine deficiency

⁷ The statistics include all splenectomies performed in the Mayo Clinic up to April 1, 1924.

disease Iodin is the governor on the metabolic engine. If it is lacking, conditions must be corrected before operation is undertaken. Dr Crile has described the measures he has worked out to prepare these patients for operation, but we must do something for this deficiency of iodine. The administration of compound solution of iodine, 10 drops at bedtime for ten days, will absolutely transform these acutely toxic cases. The patient who is in crisis with vomiting or diarrhea, great emaciation and marked prostration, will in a few days become tranquil. The pulse rate will go down from 20 to 50 points, and the metabolic rate will recede. Under those circumstances, the technic that Dr Crile has worked out can be employed and the death rate will be diminished to the vanishing point. Not only that, the medical death rate will be diminished because the medical death rate for these acute conditions is very high. Plummer reports that he has had no medical death in eight months, whereas, before using compound solution of iodine, he observed about seventy-five deaths a year. The most striking feature of Dr Mayo's paper was the wonderful way in which purpura hemorrhagica patients are relieved and cured, promptly and permanently by splenectomy.

DR E. M. HANRAHAN, Baltimore. From the point of view of the surgeon, the problem of splenic disorders reduces itself to the question, "When should splenectomy be performed?" The answer lies in the comparison of the natural history of the disease both with and without medical treatment, and the results seen in similar conditions after operation. We usually hear of end-results only after splenectomy and the greater part of these reports have dealt with the results over too short a period to give the true value of the operation. There is beginning to develop what might be called a surgical classification of splenic disorders which is based on the end-results seen after splenectomy. This classification may be represented in three groups. First are those diseases in which we see remarkable results following the operation, best exemplified by purpura hemorrhagica or essential thrombocytopenia. Second are those cases in which we usually see a clinical cure. In this group we have hemolytic jaundice and splenic anemia or Banti's disease. In the third group, I would place pernicious anemia, a disease with apparently more or less splenic involvement, in which I do not feel that splenectomy is ever indicated. I would take exception to Dr Mayo's inclusion of this disorder with hemolytic jaundice and splenic anemia, as a study of the end-results shows that we are dealing with quite different processes. I have compared the results in patients with pernicious anemia not subjected to operation between 1913 and 1918 with ten patients operated on. The average duration of life in the ten cases was fourteen months. The average duration of life in the cases in which the spleen was not removed was eighteen months. On the basis of this study, I feel that pernicious anemia should not be included among those diseases in which splenectomy is always to be considered. In this third group I would place the leukemias, both myeloid and the lymphoid, in which splenectomy is almost contraindicated. The decision for splenectomy must be based on a comparison of the natural history of the disorder with the history of cases treated with splenectomy. In this comparison must be considered the operative mortality, which varies from 10 to 25 per cent. Dr Mayo, I think, is the one man who has been responsible for the marked reduction in operative mortality in this operation. I feel from a recently completed study of the end-results in thirty-five cases that splenectomy offers least in those cases of hemolytic jaundice or splenic anemia which show a tendency toward pernicious anemia, and that it offers the most in those cases which show the least signs of uncompensated blood destruction. Against this we must weigh the chances of cure with the high operative risk.

DR FRANK H. LAHEY, Boston. There are a few points in which I have been very much interested. One is the diagnosis of thyroid disease. I have in the past had difficulty in differentiating the so-called neurocirculatory asthenia cases. I have found that exophthalmic goiter may exist in the entire absence of an enlarged gland or even in the presence of a diminutive gland. I believe it is in this type that we should

make a most critical study as to whether the tachycardia is of thyroid or nonthyroid origin. Our own experience is that if it is of nonthyroid origin, the true basal metabolic rate is not elevated. It is essential that the true rate be obtained by repeated tests if necessary. I believe that the mortality following thyroid operations has been lowered not by the anesthesia but by the preoperative study of the cases, the selection of the operation and the postoperative care. In our clinic the medical mortality has always been much higher than the surgical mortality. We have now operated on 2,200 thyroid patients with an operative mortality of 0.9 per cent and a patient mortality of 1.3 per cent. In our locality goiter is not endemic, and the percentage of the various types is: primary hyperthyroidism, 46; secondary hyperthyroidism, 26; nontoxic goiter, 28. Since the medical mortality is higher than the surgical, and since there is often undoubtedly a cardiac complication (auricular fibrillation and decompensation), then our duty is to get these patients well by the method that will do it the most quickly, the most completely, the most certainly, and that is surgery. It takes three months to ascertain whether the roentgen ray will cure, and within three months the average hyperthyroid patient can be restored to health by surgery, so that I think surgery is by all means the method of choice. The roentgen ray shows a much higher percentage of failures and it does not effectively combat the disease. It is impossible in the roentgenogram to tell the type of thyroid tissue with which one is dealing, and so just how much to leave behind. The question of compound solution of iodine is very interesting. I think we owe Dr Plummer a great deal for the development of its use in primary hyperthyroidism. However, we must bear in mind that there is no longer fear of table deaths in thyroid clinics, but it is the postoperative reaction that kills the patient. The use of compound solution of iodine has made it possible to eliminate, it is said, many ligations. Ligations have had a great deal to do with lowering the mortality of thyroid operations through their being made use of as minor trial procedures and if we give up these trial procedures because of the use of compound solution of iodine, we shall lose one of the real life-saving measures in thyroid surgery. I believe we must associate the clinical picture of the patient when we first see him with his condition after he has been rested in bed, and if there is any doubt, treat by ligation or hemithyroidectomy, because after all, the real value of preliminary operation in hyperthyroidism is not only the temporary benefit to the patient but also his psychic adjustment to the operations and the knowledge of how great the reaction to the operative procedure may be. We know that if he will stand one ligation he will stand another, if he will stand removal of one side of the gland he will stand removal of the whole gland. After all, the important thing is that the patient get through safely and if it is necessary to do an occasional extra operation which might not be necessary, that is the side to err on, and not do too much and regret too late not having made use of a lesser procedure.

DR J. M. BLACKFORD, Seattle. During 1911 and 1912 I had opportunity to do many necropsies on exophthalmic patients. In 1916 I made a study of all the necropsy cases at Rochester and discovered a surprising fact. There were almost as many medical deaths as surgical. Up to 1912 ligations had not been done or at least not with frequency. Further, up to that time the internist had not realized that the patient critically ill from exophthalmic goiter crisis should not be dealt with surgically. The recognition of these fundamental defects in judgment as to when and how to operate were brought about by the fact that before 1912 in patients under 25, suffering from exophthalmic goiter, the mortality from surgical procedures was 27 per cent, and the gross surgical mortality was 36 per cent. During 1913 ligation came into extensive use, also better judgment in not operating on the critically ill patient in crisis. The surgical mortality rate immediately dropped to 25 per cent for all ages and has stayed at approximately that figure until two years ago. Within the last few weeks I reviewed this matter of iodine in the treatment of exophthalmic goiter. Dr Haggard spoke of the importance of the use of iodine, but has not gone into detail as to what it is supposed to do. It seems that the

use of compound solution of iodine definitely and almost immediately destroys symptoms of dysthyroidism, but apparently does not materially affect the straight hyperthyroidism which goes along with exophthalmic goiter. Those patients in delirium, vomiting, diarrhea, extreme emaciation and psychic upsets, that make them entirely irresponsible, occasionally with mania, within from twenty-four to forty hours after getting a large dose of compound solution of iodine come back to a state of mind and health that is an entirely different picture. Dr Plummer was very emphatic in stating that straight hyperthyroidism is not greatly affected by iodine and hence iodine is not a cure for exophthalmic goiter, and will harm the patient with a toxic adenoma. Two other very striking things were brought out. Dr Boothby told me that they had cut down the number of ligations from being nearly a routine procedure until this year he thought they would not ligate more than 8 per cent of cases of exophthalmic goiter. They are doing a primary thyroidectomy in a very large proportion. Medical deaths, which in my day varied from eighteen to twenty patients a year, in spite of the fact that they had then a smaller number of patients, have decreased until now the medical death rate approaches the vanishing point. The surgical death rate has been lowered so far as to make it a relatively safe procedure. They have gone along for several months without mortality. The gross mortality (combined medical and surgical) was 56 per cent up to 1922. The last year this gross mortality has been reduced to less than 1 per cent. These results prove that we have a most valuable method of treatment in compound solution of iodine for the crisis of exophthalmic goiter. Not all patients with exophthalmic goiter are benefited by iodine. A patient who has carried an exophthalmic goiter for a number of years finally reaches a stage at which there is something that possibly approaches a straight low grade hyperthyroidism. These patients, in general, do not show anything like the remarkable improvement, and some of them show no improvement, from the use of compound solution of iodine. A certain percentage of patients with exophthalmic goiter also have toxic adenoma. Further it is occasionally impossible to differentiate clinically the toxic adenoma from exophthalmic goiter. A patient may have both diseases. If adenomas are suspected iodine must be used very cautiously. The protection afforded by compound solution of iodine is very rapidly lost after the medication is discontinued.

DR GEORGE W. CRILE, Cleveland. Professor Carlson said that he thought that logically the adult population should be as much in need of the iodine administration as the children. We are waiting for the physiologists to tell us definitely what is the exact function of the thyroid. In view of our present uncertainty, it would seem best to stick to the old clinical attitude, viz. that a deficiency should be established before iodine is given since as has been pointed out, iodine administration is very often followed by bad results especially when used for the wrong type of goiter. I hope that the use of compound solution of iodine will eventually prove to be of as much value as is hoped for. We always give 2 grains (0.13 gm.) of thyroid extract the night before a thyroidectomy, and 2 grains on the morning of the thyroidectomy. Following operation, the patient often has a peculiar look which all our group recognize. In such cases we give thyroid extract and thyroxine two or three days after operation. There is temporary deficiency that we have always tried to meet. Whether or not Dr Plummer by the use of compound solution of iodine will make these patients far more safe remains to be seen.

DR WILLIAM J. MAYO, Rochester, Minn. Most of the so-called diseases more or less associated with the spleen are not true diseases but syndromes, the names being merely hoo's on which to hang a miscellaneous assortment of kindred dyscrasias because we do not know just what else to do with them. As we learn to differentiate better, we change the nomenclature. In the later and incurable stages we hold definite opinions, and the death of the patient substantiates the prognosis perhaps rather than the diagnosis. I quite agree with Dr Hamafor that we cannot expect to cure pernicious anemia or splenomyelogenous leukemia by splenectomy, but the operation under proper conditions is reason-

ably free from risk, is palliative, and in some of the early, or perhaps better, less well defined cases, the patients live for years and are able to work. As nearly as I can make out, the spleen is a kind of an old fool that acts as an agent of some as yet little understood pathologic processes elsewhere in the body, and when set in motion does not know when to stop. It goes ahead doing something it ought not to do and keeps it up until the patient dies. When the spleen is once stimulated to action, it develops a pathologic condition of its own which is not amenable to corrective treatment. Splenectomy under these circumstances removes a rebellious agent, but does not necessarily cure the original disease. Professor Carlson speaks about cooperation between the physiologist and the clinician. He visited us two years ago and his suggestions at that time with regard to this and many other matters stimulated us greatly. We appreciate visitors of this type at the Mayo Clinic and would like to have more of them. We hope that Professor Carlson may come again. With reference to the spleen, I am reminded of the old story of the professor questioning a student concerning its function. The student after deep thought replied "I did know but I have forgotten" to which the professor added "What a pity because you are the only one who ever did know the function."

EXPERIMENTAL STUDIES ON YELLOW FEVER IN NORTHERN BRAZIL

HIDEYO NOGUCHI, M.D.

Member of the Rockefeller Institute for Medical Research, New York

HENRY R. MULLER, M.D.

Special Member, Field Staff, International Health Board
Rockefeller Foundation

OCTAVIO TORRES, M.D., FLAVIANO SILVA, M.D.

Directoria Geral de Saude Publica do Estado da Bahia, Faculdade de Medicina da Bahia

HORACIO MARTINS, M.D.

Bacteriologist, Instituto Oswaldo Cruz da Bahia

ALVARO RIBEIRO DOS SANTOS, M.D.

Faculdade de Medicina da Bahia

GODOFREDO VIANNA, M.D.

AND

MARIO BÍO, M.D.

Serviço de Saneamento e Prophylaxia Rural no Estado da Bahia

Yellow fever is known to have existed in Brazil¹ from the beginning of commercial development of the country until it was practically eradicated by the vigorous antimosquito campaigns of Oswaldo Cruz, Ribas and Lacerda. In certain limited areas, in the states of Ceara, Bahia and Pernambuco, the disease was still present during 1922 and 1923.

While there was no reason to regard the yellow fever of Brazil as different from that occurring elsewhere, the micro-organism isolated from cases of yellow fever in Ecuador,² Peru,³ and Mexico⁴ had not been experimentally demonstrated as the cause of Brazilian yellow fever. Hence, an investigation into the etiologic relation of *Leptospira icteroïdes* to cases occurring in Brazil was undertaken by a joint commission of Brazilian and American workers, the latter having received an invitation from Dr Carlos Chagas, director of the

1 Boyce, R. *Yellow Fever and Its Prevention*. New York: E. P. Dutton & Co. 1911, p. 11.

2 Noguchi Hideyo, J. *Exper. Med.* 29: 547, 565, 585 (June) 1919. 30: 1, 9, 13, 87, 95 (Aug.) 1919. 30: 401 (Oct.) 1919. 31: 135, 159 (Feb.) 1920. 32: 381 (Oct.) 1920. 36: 357 (Sept.) 1922. Cohn, A. L. and Noguchi Hideyo, *Ibid.* 33: 683 (June) 1921. Noguchi Hideyo and Pareja Wenceslao, *Prophylactic Inoculation Against Yellow Fever*. J. A. M. A. 76: 96 (Jan. 8) 1921.

3 Noguchi Hideyo and Kligler I. J. *J. Exper. Med.* 33: 239, 253 (Feb.) 1921.

4 Noguchi Hideyo and Kligler I. J. *J. Exper. Med.* 32: 601, 627 (Nov.) 1920. Perez Grovas P. *Experimental Transmission of Yellow Fever*. J. A. M. A. 76: 362 (Feb.) 1921. A strain of *Leptospira icteroïdes* was also isolated by Dr. Thomas J. Le Blanc in Vera Cruz in 1920.

Departamento Nacional de Saude Publica, to make an expedition to Brazil under the auspices of the International Health Board of the Rockefeller Foundation. The experiments covered the period from Nov 29, 1923, to Feb 24, 1924, and were carried out at the Oswaldo Cruz Institute of Bahia, the staff of the institute, the faculty of medicine, and the state and federal departments of health being represented on the commission.

The special equipment for the work was taken from the Rockefeller Institute, including microscopes, sterile glassware of all kinds, filters, sterilizers, incubators and iceboxes. Four hundred guinea-pigs were also taken from New York, as well as fifty rabbits to furnish serum for culture medium, four *Macacus rhesus* monkeys, and three baboons. About 100 marmosets, three "prego" monkeys (*Cebus maciocephalus*) and a black spider monkey (*Ateles ater*) were purchased in Bahia.

The plan of the work involved (1) the isolation of *Leptospira icteroides*, (2) the reproduction of yellow fever in lower animals, (3) the demonstration of the Pfeiffer reaction for *Leptospira icteroides* in the serum of persons recovered from yellow fever, and the absence of such a reaction for *Leptospira icterohaemorrhagiae*, (4) the proof of the filtrability of the Brazilian strains of *Leptospira icteroides*, and (5) the determination of the protective property of the anti-icteroides immune serum (horse) prepared by means of other strains of *Leptospira icteroides* against infection with the Brazilian strains.

ISOLATION OF LEPTOSPIRA ICTEROIDES FROM CASES OF YELLOW FEVER

About the middle of December, it was learned that a disease believed by a local physician to be yellow fever had been prevalent for several weeks in an interior town of about 3,000 inhabitants, Villa Bella das Palmeiras. There was no railroad connection with Bahia, and the journey to Palmeiras required one day by steamer, one by train, and four on horseback. Drs Vianna and Bião were appointed by Dr Sebastião Barroso, chief of the Serviço de Saneamento e Prophylaxia Rural, to make an expedition to Palmeiras. They took with them equipment for making examinations for malarial parasites, reagent for clinical tests for yellow fever, sterile syringes for drawing blood, and eighty hermetically sealed tubes of "leptospira" culture medium. The distance and character of the journey made the transportation of experimental animals out of the question.

The medium prepared for the expedition was modified somewhat because of the conditions.⁵ The rabbit hemoglobin was omitted, since it undergoes rapid change at ordinary or higher temperatures, and distilled water was substituted for isotonic saline solution in order to produce laking of the patient's blood. The tubes were protected from the intense tropical sun by being kept partly submerged in water and covered with green leaves during the journey, both before and after inoculation.

The diagnosis of yellow fever in Palmeiras was confirmed by Drs Vianna and Bião, and cultures were made from the blood of one fatal and four nonfatal

cases, six tubes of medium being inoculated in each instance with quantities of blood in gradually decreasing amounts from 2 cc to a few drops. The tubes were brought back by Dr Vianna, Jan 4, 1924, and were immediately submitted to dark field examination by several members of the commission. There had been no mold or bacterial invasion in several instances, but the majority of the tubes were free from contamination. A rich growth of *Leptospira* was found by Dr Vianna in one of the tubes from Case 3, and somewhat later a positive finding was reported by Dr Martins in one of the Case 5 tubes. *Leptospira icteroides* was isolated, therefore, in two of the five cases studied, notwithstanding the unfavorable conditions under which the material had been transported.

Dr Bião had remained in Palmeiras, and, after Dr Vianna's departure, made cultures from four other cases.⁶ The tubes were kept in Palmeiras much longer than the first set, and when Dr Bião finally reached Bahia with them, most of them were contaminated, and the *Leptospira* could not be detected in any instance.

PATHOGENICITY AND BIOLOGIC PROPERTIES OF THE BRAZILIAN STRAINS OF LEPTOSPIRA ICTEROIDES

The original cultures of the Palmeiras strains showed very low virulence for guinea-pigs, and were even less pathogenic for marmosets.⁵ The guinea-pigs used for the inoculations were those of suitable age taken from New York. The Case 3 strain produced fatal infection in only three of eight guinea-pigs, and there was almost always a secondary infection with the paratyphoid bacillus in fatal instances. A second passage yielded a greater number of fatal infections. By the third passage, the virulence of the strains for guinea-pigs had been increased to such an extent that 0.001 cc of a mixture of blood and organ suspension representing both strains killed guinea-pigs in eight days, that is, the strains had become many thousand times more virulent.

The essential features of the lesions induced by the Palmeiras strains were hemorrhages into the lungs and gastro-intestinal mucosa, nephritis, and fatty degeneration of the liver. Jaundice was always present in definite infections, in the milder forms of the disease, a febrile reaction, beginning after a period of from four to six days and persisting one day or longer, was the only objective symptom, but positive results were secured by transferring to other guinea-pigs blood of suspensions of organs taken during the febrile stage. The demonstration of *Leptospira icteroides* in such materials could rarely be made, and even in the case of very marked infection, *Leptospira* was seldom found. The success of cultivation was also very variable and never readily accomplished.

SUSCEPTIBILITY OF MONKEYS TO THE BRAZILIAN STRAINS OF LEPTOSPIRA ICTEROIDES

Macacus rhesus had proved resistant to the strains of *Leptospira icteroides* isolated from yellow fever in Guayaquil, but the Colombian variety of marmosets had succumbed to infection, with pronounced symptoms and lesions.⁷ The Brazilian marmosets proved unsatisfactory for experiment, being not only relatively insusceptible to *Leptospira icteroides*, but nonresistant to spontaneous bacterial infections. Reproduction of yellow fever was obtained in a striking way, however, in two native monkeys (*Cebus macrocephalus*).

Two African baboons, taken from New York, and three Amazon monkeys purchased in Bahia (two of the

5 A detailed report of the work of the Joint Commission for the Study of Yellow Fever in Brazil has been published as Monograph 20 of the Rockefeller Institute for Medical Research and may be obtained free of charge by application to the International Health Board of the Rockefeller Foundation, 61 Broadway, New York City. For description of culture mediums, protocols of experimental animals, full histologic reports and illustrations the reader is referred to the monograph. A separate report of the Pfeiffer reactions is also to be published by Dr Octavio Torres and will contain clinical histories of each convalescent whose serum was tested.

6 The diagnosis in these cases was confirmed by Dr Elzvier Studart.
7 Noguchi, Hideyo. J. Exper. Med. 29: 585 (June) 1919.

species, *Cebus macrocephalus* and one black spider monkey (*Atelous atar*) were inoculated, each with 1 c c of a mixture of rich cultures of the second passage of the Palmeiras strains. The baboons had a rise of temperature for a few days, but otherwise remained well. The spider monkey also had fever on the third day but no other symptoms. Both the *Cebus* monkeys developed typical symptoms of yellow fever after an incubation period of sixty hours. The first febrile period persisted for about twelve hours, there was a brief remission, then a rise to from 105.8 to 106 F on the fourth day, after which the temperature rapidly fell. One of the animals was injected on the fourth day with 15 c c of anti-icteroides immune horse serum, which had been prepared with the Ecuadorean, Peruvian and Mexican strains of *Leptospira icteroides*, and recovered promptly. The other gradually became weak and listless and refused food (food taken during the early period of the fever had been vomited). Later it fell to the floor of the cage and seemed delirious, offering slight resistance to handling. Coma developed subsequently, and death occurred seven days after the first rise of temperature. The findings at necropsy were typical: faint general jaundice, with distinct yellowness of sclerae and ear lobes, congested gums, yellow, fatty liver, "coffee-ground" stomach contents, melena, subcapsular hemorrhage in the kidney, empty bladder (anuria). Histologic study (by Dr. Muller) of the organs showed marked fatty infiltration of liver, kidneys, and heart muscle, the fat being present in the form of very fine, closely packed globules. The cells of the convoluted tubules of the kidney were in an advanced stage of cloudy swelling and simple necrosis. Sections of the stomach stained by Perl's Prussian-blue method showed hemosiderin in patches in the surface epithelium, confirming the presence of blood in the "coffee-ground" contents of the stomach.

Suspensions of liver and kidney were negative for *Leptospira* by dark field examination, and no growth was obtained on culture medium. Sections of the organs stained by Levaditi's method of silver impregnation revealed no *Leptospira*.

Six guinea-pigs simultaneously inoculated with 0.2 c c of the same culture as controls developed typical symptoms and died in from five to seven days.

VIRULENCE OF BRAZILIAN STRAINS FOR YOUNG DOGS

Early in the course of the first transmission experiments of one of us* in Guayaquil, it had been found that young dogs (6 weeks old) developed typical and usually fatal yellow fever when inoculated with sufficiently large quantities of virulent material from guinea-pigs infected with *Leptospira icteroides*. Later experiments in puppies with strains of *Leptospira icteroides* from Mexico and Peru yielded similar results.⁸ The experiments to determine the pathogenicity of the Brazilian strains for young dogs were carried out at the Rockefeller Institute after the return of the International Health Board Commission from Brazil.

Two pups of a litter about 8 weeks old were inoculated, one intraperitoneally, and the other subcutaneously, each with 5 c c of a rich culture of Brazilian Strain 5. On the morning of the seventh day after inoculation, one of the animals was found dead, and the other was comatose. Both were deeply jaundiced. The second animal died in the afternoon of the same

day. At necropsy, "coffee-ground" material was found in the stomachs of both animals, and there were hemorrhages in both stomach and intestines. The livers were pale and mottled with lighter colored patches. The bladder was completely empty in one animal (anuria) and in the other practically so. In one instance the kidneys were large and extensively hemorrhagic, in the other pale. Histopathologic study (by Dr. Muller) revealed marked fatty infiltration of liver and kidneys. The trabeculae of the liver were distorted, the liver cells were swollen, granular and vacuolated, and numerous mitotic figures were present, there were hemorrhages and many polymorphonuclears in the sinuses. The kidneys showed marked cloudy swelling and hemorrhages. In the stomach, hemorrhages were present in the mucosa and submucosa.

Sections stained by Levaditi's silver impregnation method revealed the presence of a few fragmented *Leptospira* in liver and kidney, and the organisms were more numerous in the muscularis of the gastro-intestinal tract.

FILTRABILITY OF THE BRAZILIAN STRAINS

It had already been shown⁹ that *Leptospira icteroides* passes through the pores of Berkefeld filters, and it was desirable to demonstrate this property also in the case of the Brazilian strains.

A 1:100 dilution in isotonic saline solution of a small quantity of the original culture from Case 5 was divided and portions filtered separately through Berkefeld V and N filters. Neither filtrate showed *Leptospira* by dark field examination, but growth was obtained in one of the six tubes of leptospira medium inoculated with the N filtrate and in five of the six tubes inoculated with the V filtrate. Definite infection was induced in guinea-pigs by inoculation of the cultures obtained from the filtrates.⁶

IMMUNOLOGIC STUDIES

Pfeiffer Reaction.—A Pfeiffer reaction which had been carried out in April, 1923,¹⁰ with the serum of an American who had had yellow fever in Fortaleza, Ceara, sixty-five days previously, had indicated that the etiologic agent in this case of yellow fever in Brazil was identical with the strains of *Leptospira icteroides* isolated elsewhere. At the time when our work in Bahia was begun, no cases were available for isolation experiments, but an excellent opportunity was offered to test the immunologic properties of the serums of persons recovered from yellow fever in relation to the strains of *Leptospira icteroides* obtained from cases of the disease in Ecuador, Mexico and Peru. Through the cooperation of the physicians¹¹ who had treated the cases, we obtained nine serums from residents of Bahia, chiefly foreigners, who had had yellow fever during the year 1923. Parallel reactions were carried out with three strains of *Leptospira icterohaemorrhagiae*, two of American¹² and one of Ecuadorean¹³ origin. The serums of four persons who had never had yellow fever were tested simultaneously as controls.

All the serums from yellow fever convalescents gave a positive Pfeiffer reaction, and all the normal serums a

9 Noguchi Hideyo J. Exper. Med. 30:13 (Aug.) 1919. Nichols H. J. Personal communication to the author. Dieterich F. H. Am. J. Trop. Med. to be published.

10 Noguchi Hideyo Ann. J. Trop. Med. 4:131 (March) 1924.

11 Drs. Fernando Luz Alberto do Rio Dias de Moraes Vidal de Cunha and Eduardo Araujo.

12 Noguchi Hideyo J. Exper. Med. 25:755 (May) 1917. Wadsworth Augustus Langworthy H. Virginia Stewart T. Constance Moore Anna C. and Coleman Marion B. Infectious Jaundice Occurring in New York State J. A. M. A. 78:1120 (April 15) 1922.

13 Noguchi Hideyo J. Exper. Med. 30:95 (Aug.) 1919.

negative Pfeiffer reaction with *Leptospira icteroides*, while *Leptospira icterohaemorrhagiae* was entirely unaffected by either the convalescent or the normal serums.⁹

As soon as the Palmeiras strains had been isolated, Pfeiffer reactions were carried out with these strains and several of the Bahia convalescent serums. All the Bahia serums gave a clearly positive Pfeiffer reaction with the Palmeiras strains.

When Dr. Bião returned from Palmeiras, February 1, he brought back four serums from persons who had had yellow fever two to six weeks previously, two of these being from the cases from which the Palmeiras strains had been isolated. All these serums gave a positive reaction with *Leptospira icteroides* from the Ecuadorean, Peruvian and Mexican sources, as well as with the homologous strains. A specimen of serum obtained a little later from a clinically clear case of yellow fever occurring in Conceição de Almeida, two days' journey from Bahia, also gave a positive Pfeiffer reaction with all the *Leptospira icteroides* strains.

The conclusion is warranted, therefore, that these yellow fever cases in Brazil were etiologically identical with those occurring in Ecuador, Peru, Mexico and Colombia.¹⁰

DETERMINATION OF POTENCY OF ANTI-ICTEROIDES IMMUNE HORSE SERUM

It has already been noted that one of the Brazilian monkeys (*Cebus macrocephalus*) developing typical symptoms of yellow fever following the inoculation of the mixture of the Palmeiras strains was saved by the administration of anti-icteroides serum on the fourth day of illness. The immune serum is that obtained from horses which have been immunized for several years with the various strains (from Guayaquil, Mexico and Peru) of *Leptospira icteroides*,¹⁴ it had been drawn two months previously, transported to Bahia in the refrigerator (4 C) and kept at about 15 C after arrival there.

The potency of the serum was tested in guinea-pigs infected with a mixture of virulent blood and organ suspension of Palmeiras Strain 3. Each of ten guinea-pigs received a dose representing 1,000 minimal lethal doses, and varying quantities of the immune serum were injected within thirty minutes. The minimum quantity of the serum tested (0.0001 c.c.) protected guinea-pigs against 1,000 minimal lethal doses, that is, 1 c.c. of the serum was able to neutralize at least 10,000,000 minimal lethal doses. Experiments in treating infected guinea-pigs at various stages of the infection had to be abandoned, because the supply of suitable animals had been exhausted.

SUMMARY

Two strains of *Leptospira icteroides* have been isolated from two of nine cases of yellow fever in Villa Bella das Palmeiras, an interior town in the state of Bahia, Brazil, by inoculation of suitable culture medium with blood drawn on the first and second days of illness, respectively.

The characteristic pathogenicity of the Brazilian strains of *Leptospira icteroides* was established by experiments with guinea-pigs taken from New York. The original cultures directly isolated from the blood of patients showed a very low virulence for guinea-pigs, but by timely passage to fresh animals during the height of fever, the virulence of the strains had been

increased several thousandfold in the third generation. The essential features of the infection were jaundice, hemorrhages into the lungs and gastro-intestinal mucosa, nephritis, and fatty degeneration of the liver. *Leptospira icteroides* was rarely demonstrable in the materials used for transmission, and the success of cultivation was variable and never readily accomplished.

Two monkeys of the species *Cebus macrocephalus* when inoculated with the Brazilian strains of the second passage, developed typical symptoms of severe yellow fever. One recovered after having received anti-icteroides immune serum (horse) on the fourth day of illness, the other died on the seventh day. Necropsy revealed the pathologic changes typical of human yellow fever, and histologic study of the organs demonstrated the presence of the characteristic fatty degenerative changes of liver and kidney. Three African baboons and a monkey of the species *Atelous ater*, similarly inoculated, developed slight fever on the third or fourth day, but otherwise remained well.

The Brazilian strains of *Leptospira icteroides* induced in young dogs a fatal infection, characterized by jaundice, hemorrhages (principally into the gastro-intestinal tract, with black vomit), and intense nephritis. Fatty degeneration of liver and kidney was marked. Dark field examination and culture were negative, but *Leptospira* was demonstrated in tissues stained by Levaditi's method of silver impregnation.

The filtrability of the Brazilian strains was established by the recovery of *Leptospira icteroides* in a culture medium inoculated with Berkefeld V and N filtrates of the original culture of Strain 5. Definite infection was induced in guinea-pigs by inoculation of the cultures obtained from the filtrates.

Serums from nine persons who had had yellow fever in Bahia from five to ten months previously, four serums from Palmeiras cases two to six weeks after their attack of the disease, and one serum taken on the fourteenth day of illness from a yellow fever patient in Conceição de Almeida, Bahia, all gave positive Pfeiffer reactions when tested with strains of *Leptospira icteroides* from sources in Ecuador, Mexico and Peru, as well as with the Brazilian strains. Parallel reactions with *Leptospira icterohaemorrhagiae* were uniformly negative. Several normal serums tested in each instance as controls gave negative reactions with both organisms. The identity of the yellow fever occurring in Ecuador, Mexico, Peru, Colombia and Brazil was thus established.

One ten thousandth cubic centimeter (0.0001 c.c.) of the anti-icteroides serum prepared in horses with strains of *Leptospira icteroides* of Ecuadorean, Mexican and Peruvian origin protected guinea-pigs against 1,000 minimal lethal doses of a Brazilian strain in the form of a suspension of blood and organs from an infected guinea-pig.

Outpatient Department Health Agency.—The outpatient departments today are placing increasing emphasis on preventive measures and on health teaching. Social service departments and special classes already exist. There are being established clinics for pregnant women, for well babies, for preschool children and facilities for the periodic examinations of well adults. The outpatient department is becoming an active community health agency. It is becoming a part of the forward looking movement which takes account of the environmental aspects of health and disease, as well as the manifestations of a pathologic process in the individual, and which strives to conserve health and prevent disease.—Smith R. M. *Hosp. Social Service* 10:26 (July) 1924.

¹⁴ Noguchi, Hideo. Prophylaxis and Serum Therapy of Yellow Fever. *J. M. A.* 77:181 (July 16) 1921.

VISCERAL DISEASE

DUE TO BACTERIAL INFECTION OF APPARENTLY
NORMAL UPPER RESPIRATORY TRACT *

MYER SOLIS-COHEN, M D

Assistant Professor of Medicine, Graduate School of Medicine of the
University of Pennsylvania
PHILADELPHIA

The search for foci of infection is commonly a quest for pus or diseased tissue visible to the naked eye or disclosed by the roentgen ray or some special physical method. Inability to elicit such evidence leads to the conclusion that there is no focus of infection in the parts examined. Such conclusion, however, ignores the possibility of persistent localized infection in the absence of suppuration or other gross tissue change.

It is well known, of course, that pathogenic micro-organisms can live on what appears to be a healthy mucous membrane without infecting the carrier, but it is not so generally recognized that such organisms can infect their host without producing at their site pathologic changes that can be seen.

In particular, the nares, the rhinopharynx, the fauces, and the tonsillar fossae, even after complete tonsillectomy, may be sites of focal infection in the absence of visible alteration of structure, that is mucous membranes with no noticeable macroscopic lesion may harbor micro-organisms, pathogenic for the patient, which live and multiply in them, and give rise to disease in neighboring or distant tissues and organs.

An ordinary bacterial culture, however, gives no information as to whether or not the organisms found are really infecting the patient. As a matter of fact, the infecting organisms may fail to grow in ordinary culture mediums, because they may be in such small numbers, compared with other organisms present at the same site but not infecting the patient, that they are overgrown and their growth is inhibited by these noninfecting germs. The latter may, indeed, be of pathogenic varieties, but the point is that, at the moment, they are not pathogenic for the person harboring them. As to them, he is a carrier only. As to the others, he is a subject of infection. It is necessary, then, to distinguish accurately between organisms that the subject carries and which for him are nonpathogenic—infestive merely—and organisms that are actually pathogenic for him, and with which, therefore, he may be said to be infected. This distinction is made by a special method of culture, which I therefore term pathogen-selective culture.

THE PATHOGEN-SELECTIVE CULTURE

A swab from the part or parts to be studied is lightly smeared on the bottom of a sterile, empty test tube, into which is then placed from 3 to 5 c c of fresh, whole, coagulable blood obtained from the patient's vein. After twenty-four hours' incubation, a drop of this blood is plated and the organisms that grow up on the plate are identified.

Parallel with this selective culture, an ordinary culture is made on Löffler's or other appropriate medium.

Profuse growth of any organism cultivated by the selective method is evidence that the patient's blood possesses little or no bactericidal or bacteriostatic power against that organism, and hence that it is highly pathogenic for him. Slight growth indicates the presence of

considerable bacteriostatic power in the patient's blood against the organism in question, and hence slight pathogenicity of this organism for the patient tested.

Absence from the selective culture plate of an organism present in the culture taken in the ordinary way, indicating that this organism has failed to grow in the patient's whole blood, evidences possession by that blood of sufficient bacterial power to kill or inhibit it. Hence, we infer that the organism in question is non-pathogenic for the patient, at the time of the test.

To make sure of results, the cultures should be studied by a trained bacteriologist. Technicians and physicians inexperienced in bacteriologic work may readily err.

The method, of course, has limitations. The reaction is, to a certain extent quantitative, and is thus affected by the relative proportion of blood and bacteria engaged. When a relatively large number of organisms, non-pathogenic to the patient, are planted in a relatively small quantity of blood, it is conceivable that the amount of bactericidal substance present may not be sufficient to destroy all of them, and, if only a few escape, they may multiply rapidly in the absence of any restraining influence. Conversely, if relatively few organisms are planted in a relatively large quantity of blood that is but slightly inimical to them, it is possible that enough of the restraining substance might be present to prevent their growth entirely.

These possibilities must be taken into account.

I have used the pathogen-selective culture on 169 patients, as many as fourteen separate cultures having been made on one patient.

The conclusion that a given organism is pathogenic to a person in whose whole, coagulable blood it grows and multiplies *in vitro*, and nonpathogenic to one whose blood destroys it or inhibits its growth, is based on certain experiments performed in the Mastbaum Research Laboratory of the Jewish Hospital, Philadelphia, by George D Heist, Solomon Solis-Cohen and myself¹ which were reported some six years ago, and which since have been confirmed by other investigators, Matsunami and Kolmer,² Bull and Bartul,³ Black, Fowler and Pierce,⁴ Smiley,⁵ and Robertson and Sia.⁶

DETERMINING ANIMAL RESISTANCE AND SUSCEPTIBILITY BY MEANS OF THE WHOLE-BLOOD TEST

It has been shown by the researches just cited that the whole, coagulable blood of animals naturally resistant to infection by a given organism possesses bactericidal or bacteriostatic power against that organism, and that such power is lacking in the blood of animals naturally susceptible to infection by that organism. If,

1 Heist G D, Solis Cohen, Solomon and Solis Cohen Myer. The Bactericidal Action of Whole Blood with a New Technique for Its Determination. *J Immunol* 3 261 (July) 1918. Solis Cohen, Solomon, Heist G D and Solis Cohen Myer. Observations on the Behavior of Diphtheria Bacilli in Whole Coagulable Blood with a Comparison of the Results of the Tests for Bactericidal and Antitoxic Immunity in the Same Persons. *Tr A Am Phys* 35 263 1920. Heist G D, Solis Cohen, Solomon and Solis Cohen Myer. A Study of the Virulence of Meningococci for Man and of Human Susceptibility to Meningococcal Infection. *J Immunol* 7 1 (Jan.) 1922.

2 Matsunami Tatsu and Kolmer J A. The Relation of the Meningococcal Activity of the Blood to Resistance to Virulent Meningococci. *J Immunol* 3 201 (May) 1918.

3 Bull C G and Bartul, Louis. Pneumococcus Cultures in Whole Fresh Blood. I. The Retardative Effect of the Blood of Immune Animals and the Mechanism of the Phenomenon. *J Exper Med* 31 233 (March) 1920.

4 Black J, Fowler Kenneth and Pierce, Paul. Development of the Bactericidal Power of Whole Blood and Antibodies in Serum. *J A M A* 75 915 (Oct 2) 1920.

5 Smiley H. Bactericidal Action of Blood of Rabbits Immunized Against Pneumococci. *J Infect Dis* 33 88 (July) 1923.

6 Robertson O H and Sia R H P. Studies on Pneumococcus Growth Inhibition, II. A Method for Demonstrating the Growth Inhibitory and Bactericidal Action of Normal Serum Leukocyte Mixtures. *J Exp Med* 39 219 (Feb.) 1924.

* Read before the Section on Practice of Medicine at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

for example, pneumococci⁷ are seeded in vitro in the fresh, whole, coagulable blood of the susceptible mouse or rabbit, they multiply with great rapidity, while, when similarly seeded in the blood of the immune chicken, pigeon, cat or dog, they disappear.

In like manner, diphtheria bacilli⁸ grow in the blood of the susceptible guinea-pig but disappear in the blood of the immune rat, meningococci² multiply in the blood of the susceptible mouse but are destroyed by the blood of the immune rabbit, and the globoid bodies of poliomyelitis⁹ grow in human blood but are destroyed by rabbit's blood.

Heist and I,¹⁰ working with many different micro-organisms and different individuals, found great difference in individual responses, indicating either variations in the pathogenicity of various strains of the same micro-organism, or variations in the personal resistance to a given strain of different human beings.

Preliminary to a study of the differences of individual human beings in their resistance to a given pathogenic organism, Heist, Solomon Solis-Cohen and I¹¹ experimented with bacteria that are known to be practically harmless to men under ordinary conditions, and bacteria known to be commonly harmful to men.

As examples of the former, colon bacilli, isolated from feces, were seeded in the whole blood of fourteen normal men, and almost no growth occurred after twenty-four hours' incubation. As an example of the latter, a hemolytic streptococcus, isolated from a severe leg ulcer, following a shell wound, was planted in the blood of fifteen normal men and grew vigorously in the blood of all but two. These results indicated a certain correlation between the ability of bacteria to grow in the whole, coagulable blood of man and their virulence for man.

Studies were then made of the varying virulence of meningococci for man and the varying human susceptibility to meningococcic infection.¹¹ The bloods of eighty-five men were tested against meningococci freshly isolated from the spinal fluid of a patient with cerebrospinal meningitis, and the bloods of 172 men against different strains of meningococci from the throats of carriers. It was found that the whole coagulable blood of most men will permit the rapid growth of spinal fluid strains, indicating that most men are susceptible to attacks of meningococci that have passed through the human nervous system, while the blood of but few normal men permits the rapid growth of carrier strains, indicating resistance in this great majority and susceptibility to these in only one among many. This deduction was lamentably exemplified two years later when Dr. Heist, who was such a one, developed meningococcic meningitis and died, despite early diagnosis and thorough serum treatment.

EVIDENCE FROM BACTERINATION (VACCINATION)

The inference that growth of a given organism in the whole coagulable blood of an individual indicates susceptibility to that organism, while failure to grow indicates resistance, seems to be borne out by the results in my cases of inoculation with killed bacteria, the vaccines consisting chiefly of organisms against which the patient's blood showed little or no antibacterial power. Bactericidal power against given organisms may be

developed in animals lacking it through progressive inoculations. Thus, such bactericidal power has been developed in the blood of mice against pneumococci (Solomon Solis-Cohen and Heist¹²) and against meningococci (Matsunami¹³), and in rabbits against pneumococci (Smiley⁵), against typhoid bacilli and Shiga bacilli (Black, Fowler and Pierce⁴), and against the diphtheria bacillus (Solomon Solis-Cohen, Myer Solis-Cohen and Borow¹⁴).

BACTERIAL INFECTION OF THE UPPER RESPIRATORY TRACT IN THE ABSENCE OF DEMONSTRABLE TISSUE CHANGE

It is customary to associate infection with demonstrable evidence of disease. When a rhinolaryngologist reports that there is no pathologic condition in the upper respiratory tract, both he and the internist regard those parts as free from infection and eliminate them in the search for a focus. They fail to recognize that it is the presence of bacteria, pathogenic to the individual, that constitutes an infection, not the presence of grossly diseased tissue. Undoubtedly, such diseased tissue, and especially pus, presupposes the existence of a bacterial infection, but the reverse is not true.

BACTERIAL INFECTION OF THE APPARENTLY NORMAL RHINOPHARYNX

As I¹⁵ have recently pointed out, a normal looking rhinopharynx frequently is the site of focal infection. It is, in fact, one of the most important sites in the upper respiratory tract. Ignorance of this possibility has doubtless led in many instances to the missing of the focus of infection and to the removal on suspicion of healthy teeth and tonsils. When a patient does not improve after the removal of diseased tonsils it may be because the rhinopharyngeal focus remains. Failure of autogenous vaccine therapy following tonsillectomy may sometimes be explained by the fact that vaccines prepared from the organisms found in the tonsils frequently do not contain the organisms, pathogenic for the patient, present on the rhinopharynx but not present in the tonsils.

BACTERIAL INFECTION OF THE APPARENTLY NORMAL NARES

The portion of the upper respiratory tract least likely, in the absence of disease, to be infected with micro-organisms, pathogenic for the patient, is the nares. Yet, in some cases, although apparently healthy, the nasal passages act as a focus of infection. Especially after the removal of diseased tissues are they likely to retain the organisms that caused the pathologic condition, and which continue the infection after an apparently successful operation. It is probably such a continuing infection that keeps up the ethmoiditis that permits polyps to return after their complete removal, that is responsible sometimes for the persistence of asthma, and that occasionally prevents the cure of hay-fever. When vaccine prepared from organisms obtained from the tonsils fails to remedy an arthritis, one reason may be that it fails to contain organisms from the nose, specifically pathogenic for the patient, which were not present in the tonsils.

7 Heist, Solis-Cohen and Solis-Cohen (Footnote 1). Bull and Bartual (Footnote 3). Smiley (Footnote 5). Robertson and Sia (Footnote 6).

8 Solis-Cohen, Heist and Solis-Cohen (Footnote 1 second reference).

9 Heist, Solis-Cohen and Solis-Cohen (Footnote 1 first reference).

10 Solis-Cohen, Myer and Heist, G. D. A Method of Distinguishing from Among Various Organisms Present in a Patient Those That Are and Those That Are Not Acted Upon by the Patient's Whole Blood. Penn. M. J. 25: 27 (Oct.) 1921.

11 Heist, Solis-Cohen and Solis-Cohen (Footnote 1 third reference).

12 Heist, G. D. and Solis-Cohen, Solomon. The Bactericidal Action of the Whole Blood of Rabbits Following Inoculations of Pneumococcus Bacteria. J. Immunol. 4: 147 (July) 1919.

13 Matsunami, Tatsu. Studies on the Meningococcicidal Activity of Blood. J. Immunol. 5: 51 (Jan.) 1920.

14 Solis-Cohen, Solomon, Solis-Cohen, Myer and Borow, L. S. Further Observations on the Behavior of Diphtheria Bacilli in Whole Coagulable Blood. Tr. A. Am. Phy. 36: 98 (1921).

15 Solis-Cohen, Myer. The Rhinopharynx as a Site of Focal Infection, Ann. Otol. Rhinol. & Laryngol. to be published.

BACTERIAL INFECTION OF THE APPARENTLY
NORMAL TONSILS

Bacterial infection of a tonsil pronounced not diseased by a competent rhinolaryngologist is rare, but occasionally does occur

BACTERIAL INFECTION OF THE TONSILLAR FOSSA,
AFTER COMPLETE TONSILLECTOMY

Much more frequent is the presence of a bacterial infection of the tonsillar fossae, from which the tonsils have been removed at a more or less remote period. It is the overlooking of this condition by both rhinolaryngologist and internist that so frequently misleads them. With the extirpation of diseased tonsils, they believe the infection has been removed. Most heart specialists, for instance, insist on the excision of diseased tonsils, some even have all tonsils removed on suspicion. They then believe that all sources of infection have been removed from the throat, seeming not to realize that it is the micro-organisms, pathogenic for the patient and present in the throat, that are the agents of infection, not the diseased tonsillar tissue. Study of the bacteria in the throat, by the pathogen-selective method, would demonstrate in many of these cases that the same organisms that have flourished in the tonsils are still persisting on the mucous membrane, and that, subsequent to the tonsillectomy, the patient has acquired little or no resistance against them. This means that the bacterial focus of infection still remains in the throat, and that the physician has been deluding himself in thinking that it has been removed. Bacteriologically speaking, tonsillectomy merely removes the bacteria retained in the tonsil as it is excised. The organisms that are on other parts of the throat and those that spill out on the throat during the operation, frequently persist and multiply, and they or their toxins may be carried to distant tissues and organs. The record of a tonsillectomy in a patient's history always makes me suspect the presence of a bacterial infection in the throat rather than satisfies me that all infection there has been removed.

The frequent failure of tonsillectomy to relieve the condition for which it was performed may be based on failure to recognize the persistent throat focus.

TREATMENT OF BACTERIAL INFECTION OF AN
APPARENTLY NORMAL UPPER RESPIRATORY TRACT

An infection due to the presence on an apparently normal upper respiratory tract, of organisms pathogenic for the patient, because of the absence in the patient's blood of sufficient bactericidal or bacteriostatic power against them, can be treated only by developing and increasing in such patient this lacking power. This is accomplished by the proper administration of a properly prepared bacterial vaccine.

ESSENTIALS OF A PROPERLY PREPARED BACTERIAL
VACCINE

Successfully to combat a bacterial infection, the killed culture must contain all the organisms in the infected area that are pathogenic for the patient. As I have shown in previous papers,¹⁶ different organisms are frequently present on different portions of the upper respiratory tract. When cultures are taken separately from each tonsil or tonsillar fossa, each naris and the rhinopharynx, certain organisms will be found present in one culture that are absent from another. Organisms

will usually be obtained from the rhinopharynx, for instance, that are not found on the fauces, and vice versa. Consequently, a culture obtained from the tonsillar crypts alone will seldom contain all the organisms that are present in the nares and the rhinopharynx. It is evident that a vaccine prepared from a partial culture cannot cause increase in bactericidal power against the organisms that it does not include. To be effective, therefore, a vaccine for the treatment of infection of the upper respiratory tract should contain all the organisms pathogenic for the patient that are present in any and all parts of that tract.

These organisms can often be obtained on ordinary culture. Sometimes, however, as pointed out earlier, an organism, nonpathogenic for the patient, is present in such large numbers that it will overgrow and inhibit the growth of an organism pathogenic for the patient, but which is present in relatively small numbers. A vaccine prepared from such a culture will consequently fail to contain the very organisms that are necessary to make it effective.

Furthermore, there is little reason for inoculating large numbers of organisms against which the patient's blood already has good bactericidal power. Yet such organisms frequently make up the usual autogenous vaccine which consists chiefly of the predominating organism. It will readily be seen that, even should all the organisms pathogenic for the patient be present in such a vaccine, they may represent such a small fraction of the whole that they are ineffective. When the physician, for instance, administers 100,000,000 killed organisms of such a vaccine, he may be giving only 5,000,000 or 10,000,000 of the only organisms that could accomplish what is desired. By means of the pathogen-selective culture, however, it is possible to make up the vaccine intelligently. A good general rule is to use from 90 to 95 per cent of the organisms that are pathogenic for the patient, and from 5 to 10 per cent of the organisms that appear to be nonpathogenic to him. The latter are introduced in order to reproduce some of the environment, on the supposition that the symbiosis may have some effect on the virulence.

Another advantage of the pathogen-selective method is that the blood usually destroys any saprophytic organisms that may contaminate the culture.

THE PROPER ADMINISTRATION OF BACTERIAL
VACCINE

The method of administering the vaccine is another important factor. It should be based on the individual reactions observed. The development of bactericidal substances progresses differently in different individuals and against different organisms, hence, the dosage never can be accurately determined in advance. An initial dose of 50,000,000 killed organisms is commonly safe, but each subsequent dose will depend on the degree of the local, general and focal reactions to the previous dose. Frequently, the increase must be extremely gradual. Sometimes, no increase at all can be given for several doses.

It is probable that routine administration with doses determined in advance by manufacturer or bacteriologist, instead of careful adjustment of dose and interval to the individual reaction, is responsible for many of the failures in vaccine therapy.

VISCERAL DISEASE DUE TO A PURELY BACTERIAL
INFECTION OF UPPER RESPIRATORY TRACT

Many tissues and organs may become the seat of disease due to the action of micro-organisms or their

¹⁶ Solis Cohen, Myer, and Heist G. D. (Footnote 10) Solis Cohen Myer (Footnote 15) Lingering Influenza. *Am. J. Clin. Med.* 21: 11 (Jan.) 1924.

toxins, carried from a bacterial focus in an upper respiratory tract that, to the turned eye, presents no macroscopic alteration in structure. Among the examples of visceral disease so produced, reported in this paper, are cases of myocarditis, endocarditis, nontuberculous pulmonary infiltration, pyelitis, cystitis, cholecystitis and appendicitis.

First are reported those cases with no history of the patient at any time having had gross disease in the upper respiratory tract. Thereafter are reported the cases of those patients from whose upper respiratory tract pathologic tissue has at some time been removed. In all the cases reported, the upper respiratory tract has been pronounced normal at the time of examination by a competent rhinolaryngologist. In some patients, the sinuses were examined by roentgen ray with negative results.

CASES IN WHICH THE UPPER RESPIRATORY TRACT HAS NEVER EXHIBITED GROSS EVIDENCE OF DISEASE

CASES OF MYOCARDITIS

CASE 1—A man, aged 64, was suffering from myocarditis of twenty years' duration, toxemia and cardiac dilatation. All the teeth were lost from pyorrhea. The urine and the blood chemistry (i. e., blood urea, blood urea nitrogen and blood sugar) were normal. The Wassermann test and the roentgen-ray examination of the chest and nasal accessory sinuses were negative. The feces contained 70 per cent gram-negative organisms to 30 per cent gram-positive. The blood showed a slight degree of anemia.

The tonsils contained a nonhemolytic streptococcus and *Micrococcus catarrhalis*, pathogenic for the patient, pneumococcus slightly pathogenic for him, and *Staphylococcus pyogenes-albus*, nonpathogenic for him.

The rhinopharynx contained *Staphylococcus pyogenes-albus* pathogenic for him, pneumococcus, slightly pathogenic for him and *Staphylococcus pyogenes-albus* nonpathogenic for him.

CASE 2—A woman, aged 48 had suffered from myocarditis and thyroid enlargement for eighteen years, and was suffering acutely from cardiac dilatation, pulmonary edema, hemoptysis, marked arrhythmia with auricular fibrillation, tachycardia and weakness.

The blood picture, blood chemistry and urine were normal. The Wassermann reaction was negative.

Physical examination of the lungs after the pulmonary edema had cleared up, showed a general infiltration. Roentgen-ray examination disclosed an infiltrating process in both the upper lobes and moderate fibrosis, spreading from the hilum field to the bases.

The tonsils contained Friedländer's bacillus highly pathogenic for the patient, and a nonhemolytic streptococcus and *Micrococcus catarrhalis* nonpathogenic for her. A culture of the rhinopharynx gave identical results.

Ten and a half weeks later, cultures on Löffler's medium were made of the sputum and of the upper respiratory tract.

The sputum contained Friedländer's bacillus, which grew profusely, a few pneumococci *Micrococcus catarrhalis* and a few streptococci, but no tubercle bacilli.

The rhinopharynx contained Friedländer's bacillus which grew profusely, *Bacillus pseudodiphtheriae* and *Staphylococcus pyogenes-albus* in small numbers.

The tonsils contained Friedländer's bacillus, which grew profusely a few pneumococci, a few nonhemolytic streptococci and *Micrococcus catarrhalis*.

The nares contained *Staphylococcus pyogenes-aureus* and *albus* and a few *Bacilli pseudodiphtheriae*.

Some improvement followed the ordinary treatment for cardiac decompensation, but marked benefit resulted from the administration of a vaccine made chiefly from the offending organisms.

CASE 3—A man, aged 47, had myocarditis of three weeks duration, with cardiac enlargement and some decompensation. The urine and the blood chemistry were normal. The Wasser-

mann test was negative. The blood showed a slight degree of anemia and a slight leukocytosis.

The nares contained *Staphylococcus pyogenes-albus* slightly pathogenic for the patient, and *Bacillus pseudodiphtheriae*, nonpathogenic for him.

The tonsils contained a nonhemolytic streptococcus that had very little pathogenicity for him *Staphylococcus pyogenes-albus* and *aureus* pathogenic for him and *Bacillus pseudodiphtheriae* and pneumococcus, nonpathogenic for him.

The rhinopharynx contained *Staphylococcus pyogenes-aureus* and *Micrococcus catarrhalis* pathogenic for him, and *Bacillus pseudodiphtheriae* nonpathogenic for him.

CASE 4—A man aged 63½, had lingering influenza of four years' duration, myocarditis and slight cardiac enlargement. The urine and the blood chemistry were normal. The Wassermann test was negative. The blood showed slight polycythemia and slight leukocytosis.

The tonsils contained a nonhemolytic streptococcus and *Micrococcus catarrhalis* pathogenic for the patient, and *Staphylococcus pyogenes albus* and *Bacillus pseudo-diphtheriae*, that failed to grow in his blood.

The rhinopharynx contained a nonhemolytic streptococcus *Micrococcus catarrhalis* and *Bacillus pseudodiphtheriae* pathogenic for him, and *Staphylococcus pyogenes-albus*, nonpathogenic for him.

CASE 5—A woman aged 39 had myocarditis following lingering influenza of two months' duration. The urine was normal.

The right tonsil contained *Streptococcus viridans*, pathogenic for the patient, pneumococcus, that grew up slightly in her blood and *Micrococcus catarrhalis*, nonpathogenic for her.

The left tonsil contained *Staphylococcus pyogenes-aureus* and *Streptococcus viridans* pathogenic for her and pneumococcus and *Micrococcus catarrhalis*, nonpathogenic for her.

The nares contained *Staphylococcus pyogenes-aureus* and *albus* very slightly pathogenic for her.

The rhinopharynx contained *Streptococcus viridans* pathogenic for her, staphylococcus, having little pathogenicity for her and pneumococcus, having none.

Marked improvement followed the administration of vaccine made chiefly from those organisms showing pathogenicity for her.

CASES OF ENDOCARDITIS

CASE 6—A boy aged 15 years, had mitral regurgitation and aortic roughening, marked cardiac dilatation, and myocarditis with marked decompensation.

The tonsils and rhinopharynx contained *Staphylococcus pyogenes-aureus* in large numbers and *Streptococcus non-hemolyticus* in small numbers, both pathogenic for him *Micrococcus catarrhalis*, slightly pathogenic for him and pneumococcus, nonpathogenic for him.

The nares contained *Staphylococcus pyogenes-albus*, pathogenic for him and *Bacillus pseudodiphtheriae* slightly pathogenic for him.

CASE 7—A girl aged 8 years had chorea of four weeks duration, cardiac dilatation and aortic roughening. She had three decayed teeth, which were extracted. There was a mild degree of anemia and a moderate leukocytosis.

The nares contained *Staphylococcus pyogenes aureus*, pathogenic for the patient.

The tonsils contained diphtheroids pathogenic for her and a nonhemolytic streptococcus which failed to grow up in her blood.

The rhinopharynx contained a nonhemolytic streptococcus pathogenic for her and *Micrococcus catarrhalis*, nonpathogenic to her.

CASE 8—A girl, aged 6 years had mitral regurgitation and aortic obstruction with enormous cardiac dilatation and marked decompensation. There was congestion of the kidneys the liver and the spleen, and a marked anemia. A blood culture was negative.

Both the throat and the rhinopharynx contained a non-hemolytic streptococcus pathogenic for her.

CASE OF CHOLECYSTITIS AND APPENDICITIS

CASE 9—A woman, aged 34 had mild cholecystitis of fifteen years' duration mild chronic appendicitis, and toxemia. The

diagnosis of the first two conditions was confirmed by a roentgen-ray gastro-intestinal study, and of the first by duodenal drainage as well. The urine, blood chemistry and feces were normal. Organisms in the feces were in the proportion of 75 to 80 per cent gram-negative to 25 to 20 per cent gram-positive. The Wassermann test was negative.

The right tonsil contained a nonhemolytic streptococcus and leptothrix, pathogenic for the patient, and *Micrococcus catarrhalis* and a gram-negative bacillus, nonpathogenic for her.

The left tonsil contained *Streptococcus viridans* and *Staphylococcus pyogenes-aureus*, pathogenic for her, and *Micrococcus catarrhalis* nonpathogenic for her.

The rhinopharynx contained *Streptococcus viridans*, pathogenic for her, *Bacillus pseudodiphtheriae*, slightly pathogenic for her, and *Micrococcus catarrhalis* and *Staphylococcus pyogenes-albus*, nonpathogenic for her.

The duodenal fluid, after drainage, contained *Bacillus coli* and *Staphylococcus pyogenes-aureus*, pathogenic for her, and *Staphylococcus pyogenes albus* and a gram-positive bacillus, nonpathogenic for her.

The feces contained *Bacillus coli*, a nonhemolytic streptococcus, *Staphylococcus pyogenes albus* and a few unidentified organisms, pathogenic for her, and *Bacillus mesentericus*, *Staphylococcus pyogenes-aureus*, a gram-positive coccobacillus, and possibly other unidentified organisms, which failed to grow in her blood.

CASE OF PYELITIS AND CYSTITIS

CASE 10—A woman, aged 38, had suffered for a year and a half from cystitis and pyelitis of the right kidney, and toxemia. Treatment through the cystoscope failed to cure the condition. The urine contained a trace of albumin, pus cells, very many bladder and a few renal cells, some cylindroids and extremely few hyaline casts. The blood chemistry was normal. The Wassermann test was negative. The gram-negative organisms in the feces were 75 per cent, to 25 per cent of gram-positive organisms.

The nares contained *Staphylococcus pyogenes-albus*, slightly pathogenic for the patient, and *Micrococcus catarrhalis*, nonpathogenic for her. The right tonsil contained *Streptococcus viridans* and pneumococcus, slightly pathogenic for her, and *Staphylococcus pyogenes-albus*, nonpathogenic for her.

The left tonsil contained *Streptococcus viridans* and leptothrix, pathogenic for her, and *Micrococcus catarrhalis*, nonpathogenic for her.

The rhinopharynx contained a nonhemolytic streptococcus, pathogenic for her, *Micrococcus catarrhalis*, which grew slightly in her blood, and pneumococcus, nonpathogenic for her.

The feces contained *Bacillus coli*, *Bacillus mesentericus*, staphylococci and other unidentified organisms, which grew in her blood.

The urine contained *Staphylococcus pyogenes albus*, pathogenic for her, and *Bacillus pseudodiphtheriae*, slightly pathogenic for her.

The patient improved greatly under treatment with vaccine prepared according to the method I have described, and, in addition to the general and local reactions, always exhibited focal reactions in the bladder and in the upper respiratory tract after each dose. The patient finally would come for vaccine treatment only at intervals of a month or so, and the symptoms returned.

An ordinary culture of the urine seven months after the first culture, showed a profuse growth of *Bacillus coli* and a sparse growth of *Staphylococcus pyogenes-albus*.

Pathogenic-selective and ordinary cultures were taken nine days later with the following results.

The rhinopharynx contained a nonhemolytic streptococcus and pneumococcus, pathogenic for the patient, and *Micrococcus catarrhalis*, *Bacillus pseudodiphtheriae* and *Staphylococcus pyogenes-albus*, nonpathogenic for her.

The tonsils contained a nonhemolytic streptococcus, pathogenic for her, *Micrococcus catarrhalis* which grew slightly in her blood, and *Staphylococcus pyogenes-albus*, nonpathogenic for her.

The urine contained only *Bacillus coli*, which grew very sparsely in her blood.

A new vaccine was prepared, small doses of which caused marked focal, general and local reactions.

CASES IN WHICH DISEASED TISSUE HAS BEEN REMOVED FROM THE UPPER RESPIRATORY TRACT

In a patient seen for the first time after operation, it is sometimes impossible to say whether or not the visceral disease existed before the removal of the infected tissue.

CASES OF ENDOCARDITIS

CASE 11—A girl, aged 8, whose tonsils had been removed the preceding year, presented aortic obstruction, cardiac dilatation and myocarditis, with decompensation. The electrocardiogram was normal. The urine showed a trace of albumin and some leukocytes. The blood showed a moderate degree of anemia. The Wassermann test was negative. A blood culture was sterile.

The tonsillar fossae and rhinopharynx contained *Streptococcus hemolyticus*, pathogenic for the patient, and staphylococci, nonpathogenic for her.

A marked improvement followed the use of a vaccine made from this *Streptococcus hemolyticus*.

CASE 12—A girl, aged 11 years, who had had the tonsils removed during her sixth year, had exhibited some cardiac symptoms for two years, and had a slight mitral regurgitation. The Wassermann test was negative.

The rhinopharynx and the tonsillar fossae contained *Micrococcus catarrhalis* and a gram-negative bacillus, pathogenic for the patient, *Staphylococcus pyogenes aureus* and *albus*, slightly pathogenic for her, and *Bacillus pseudodiphtheriae* and pneumococcus, nonpathogenic for her.

The nares contained *Staphylococcus pyogenes-albus* and *aureus* and *Micrococcus catarrhalis*, pathogenic for her.

CASE 13—A man, aged 21, whose tonsils had been removed eight months previously, had been suffering from symptoms of toxemia for three years, but did not complain of any particular symptoms referable to the heart, although examination showed mitral regurgitation. The urine and the blood chemistry were normal. The Wassermann test was negative. The gram-negative organisms in the feces were 90 per cent, to 10 per cent gram-positive. The blood showed a mild degree of anemia.

The tonsillar fossae contained *Streptococcus viridans* and *Micrococcus catarrhalis*, pathogenic for the patient, and *Staphylococcus pyogenes-albus* and pneumococcus, which failed to grow up in his blood.

The rhinopharynx contained *Streptococcus viridans*, *Micrococcus catarrhalis* and *Staphylococcus pyogenes-albus*, which grew up in his blood, pneumococcus, which grew up slightly, and *Bacillus pseudodiphtheriae*, nonpathogenic for him.

CASE OF APPENDICITIS

CASE 14—A man aged 34, who had had a thyroidectomy performed thirteen years previously for exophthalmic goiter of one year's duration, had suffered for a year with occasional muscle pains. The urine was normal. A fractured nasal septum dammed up the normal nasal secretion, and the tonsils were infected. The former was straightened and the latter were removed.

As the muscular pains persisted two months after the tonsillectomy and became even more severe and more frequent, a culture was taken of the upper respiratory tract.

The tonsillar fossae contained Friedlander's bacillus, pneumococcus and *Micrococcus catarrhalis*, pathogenic for the patient.

The nares contained *Staphylococcus pyogenes albus*, pathogenic for him.

The culture from the rhinopharynx was contaminated with *Bacillus subtilis*, which grew heavily in the ordinary culture and but sparsely in the culture in the patient's blood.

Because of the contamination, the patient was requested to come for another culture, but failed to do so, as his pains were less. He later developed appendicitis, and eight months after tonsillectomy, the appendix was removed.

An ordinary culture of the excised appendix showed the presence of a nonhemolytic streptococcus, *Bacillus coli* and *Bacillus mesentericus*.

Pathogen-selective and ordinary cultures of each tonsil and of the rhinopharynx were made two weeks and a half later.

The left tonsil contained *Streptococcus viridans*, pathogenic for the patient *Micrococcus catarrhalis*, slightly pathogenic for him, and *Bacillus fusiformis*, nonpathogenic for him.

The right tonsil contained *Streptococcus viridans*, pathogenic for him, *Staphylococcus pyogenes-albus* slightly pathogenic for him, and *Bacillus fusiformis* and *Micrococcus catarrhalis*, which were killed by his blood.

The rhinopharynx contained a nonhemolytic streptococcus pathogenic for him, *Micrococcus catarrhalis*, slightly pathogenic for him, and *Staphylococcus pyogenes-aureus* and *albus*, which were killed by his blood.

Marked improvement in the muscle prisms followed treatment with a vaccine prepared from these organisms.

CONCLUSIONS

1 The upper respiratory tract may be the site of focal infection without exhibiting visible alteration in structure.

2 By means of the pathogen-selective method of culture, in which culture is made in the patient's whole, coagulable blood, it is possible to determine whether or not micro-organisms present in a patient are pathogenic for him, and thus to differentiate infection from infestation.

3 Visceral disease may be produced by micro-organisms, pathogenic for the patient, present on an upper respiratory tract in which no tissue change is demonstrable.

1833 Pine Street.

A PHYSIOLOGIC CONSIDERATION OF THE GALLBLADDER *

FRANK C. MANN, M.D.
ROCHESTER, MINN.

The gallbladder excited the natural curiosity of the older physiologic philosophers, and at all times has been enough of an enigma to command the interest of certain physiologists. In general, however, the physiologists have maintained an indifferent attitude toward the possible functional significance of the gallbladder, and many textbooks on physiology do not mention it. The fact that the organ is the usual site of gallstones, and is so often involved in pathologic processes has, of necessity, kept the pathologist cognizant of it. However, the gallbladder really first became known when the surgeon found that he could drain or remove it, and its position in medical literature was assured when the internist reported that he also could drain it.

As has happened in many other instances, the renewed interest in the gallbladder from the surgical and medical standpoint has stimulated its study physiologically and pathologically. Accordingly, whatever may be the beneficial results of the surgical controversy with regard to drainage or removal, and the surgical and medical controversy with regard to whether the knife or the duodenal tube shall prevail, it must be admitted that these contentions have awakened renewed interest in the physiology of the gallbladder, and, if the slowly accumulated, fundamental facts with regard to its physiology and pathology are not obscured too quickly by fancy and imagination, our knowledge of this interesting structure will be increased.

My purpose in this article is to present the definitely proved facts concerning the possible functions of the gallbladder, to emphasize the fact that it does have a functional significance, to show that different phases of its functional activities can be experimentally demonstrated, to present evidence that pathologic processes can very readily interfere with its functions and, finally, to correlate many of the known facts by an hypothesis of its functions.

In an article reviewing the older observations on the gallbladder, Sweet¹ has aptly compared the present status of the gallbladder with that of the tonsil and the appendix, illustrating the fact that little consideration is given to the possibility of the gallbladder having a physiologic role. While there can be no question that surgery of the biliary tract is one of the valuable contributions to modern medicine, numerous patients having been restored to well being by cholecystectomy, and that man and all animals, so far as we can determine, can compensate perfectly for the loss of the gallbladder, it must not be forgotten that its function is significant.

METHODS OF DEMONSTRATING EXPERIMENTALLY THAT THE GALLBLADDER FUNCTIONS

One of the best means of determining whether an organ functions, and what the function may be, is to study the effect of its removal. It is fairly conclusive proof that an organ functions if a definite series of changes occur following its removal or loss. Many investigators have employed the ablation method in attempting to determine the function of the gallbladder.

Effect of Cholecystectomy on the Extrahepatic Biliary Tract—The first observation on the effect of cholecystectomy, and one on which most investigators of the problem agree, was that the entire extrahepatic biliary tract became dilated following removal of the gallbladder, or ligation of the cystic duct. Within a few weeks after the loss of the gallbladder, the ducts dilate from two to six times their preoperative diameter, as has been noted in a wide variety of species of animals, and in man. The exact mechanism producing the dilatation has not been fully demonstrated. It is known to depend on an intact sphincter of the choleduct.² Dilatation does not occur if the sphincter is not active or is destroyed. Often the sphincter becomes more or less functionless by removal of the gallbladder, probably because its function is to keep the bile from passing into the duodenum and to force it into the gallbladder. When the latter is removed, the sphincter still attempts to do its part, and thus, at different periods in relation to variations in secretion of the liver, the pressure in the common bile duct is increased and dilatation results.

Effect of Cholecystectomy on the Development of Jaundice Following Obstruction of the Common Bile Duct—The most conclusive and striking evidence of a definite function of the gallbladder was obtained by a series of experiments conducted by Bollman and myself,³ in which a comparison was made of the development of jaundice following obstruction of the common bile duct in animals with the gallbladder intact, and in those in which the gallbladder had been removed. Animals in which the common bile duct is obstructed and the gallbladder left intact do not develop bilirubin in the plasma before twenty-four hours, and usually a

* From the Division of Experimental Surgery and Pathology, the Mayo Foundation.

* Read before the Section on Pathology and Physiology at the Seventy-fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1 Sweet, J. E. Mutter Lecture Tr. Coll. Phys. Philadelphia 1923.
2 Judd, E. S. and Mann, F. C. The Effect of Removal of the Gallbladder Surg. Gynec. & Obst. 24: 437-442 (April) 1917.
3 Mann, F. C. and Bollman, J. L. Unpublished data.

definitely positive test is not obtained before thirty-six hours. When the gallbladder is removed at the same time that the duct is ligated, the length of time between obstruction and the appearance of bilirubin in the plasma is greatly decreased. Often, a faintly positive test for bilirubin in the plasma can be obtained within three hours after obstruction of the duct, and the test is always positive at the end of from six to eight hours. It is thus possible, three hours after operation, to distinguish between the animals with obstruction that have had cholecystectomies and those whose gallbladders are intact. Thus, in a striking manner, the gallbladder is shown to have a definite functional significance. My observations tend to show that this difference in the rate of development of jaundice is dependent on the concentrating action of the gallbladder during the early period of the obstruction, so clearly demonstrated by Rous and McMaster.⁴ It is possible that, when the gallbladder has concentrated all the bile secreted, it can no longer function, and at this point bilirubin appears in the blood. Assuming that this explanation is correct, it may be noted that the gallbladder is able to remove the water and store all the pigment produced by the body for at least twenty-four hours.

The Effect of Cholecystitis on the Action of the Gallbladder—Whatever may be the function of the gallbladder, there are undoubtedly certain phases of its activities that are readily interfered with. Pathologists are aware of the fact that the gallbladder must be handled with the greatest care at operation or necropsy in order to preserve its normal structure. I have repeatedly observed dilatation of the common bile duct, similar to that which follows cholecystectomy, in animals in which the gallbladder became infected following the closure of a fistula of the gallbladder. The most conclusive evidence of the ease with which injury can affect the activity of the gallbladder is shown by certain experiments performed by Bollman, De Page and myself.⁵ We noted that the intravenous injection of a solution of sodium hypochlorite produced specific cholecystitis. When the common bile duct was obstructed in dogs into which chlorine solution had been injected a few days previously, the rate of appearance of bile pigment in the blood was directly proportional to the degree of inflammation produced in the gallbladder by the chemical. In animals in which the gallbladder was greatly inflamed, the bilirubin appeared in the plasma at approximately the same time as it would if the gallbladder had been removed. When the gallbladder was only slightly inflamed, the appearance of bilirubin in the plasma was delayed almost as much as if the gallbladder had been intact. This may be regarded as an additional argument for the removal of the gallbladder when it is actually diseased. At any event, it illustrates the ease with which the activities of the gallbladder can be impaired.

IMPORTANT DATA CONCERNING THE PHYSIOLOGY OF THE GALLBLADDER⁶

Comparative Anatomy—The many interesting studies on the comparative anatomy of the biliary tract have been of negative value, from the physiologic standpoint, more than of positive value. They have been of negative value, because they indicated that many of the

theories concerning the general function of the gallbladder were untenable, as they were based on anatomic considerations only applicable to a small group of species. The observations on the comparative anatomy of the biliary tract have also made it impossible, at present, to explain the absence of the gallbladder in many species in accord with any known theory of gallbladder function. Comparative anatomy has clearly demonstrated one fact of physiologic importance in all species of animals possessing a gallbladder, the anatomic arrangement is such that only part of the bile secreted by the liver ever enters the gallbladder. This is true whether or not there is more than one duct draining the liver into the duodenum, whether or not hepatic ducts enter the gallbladder directly, whether or not the gallbladder is far removed from the liver and duodenum, or whether or not it is embedded in the substance of the liver. There are no data extant with regard to the proportion of bile secreted which enters the gallbladder. It is possible that such data would show that most of the bile secreted by the liver reaches the gallbladder in some species, but from the standpoint of comparative anatomy, the gallbladder can be considered only a sampling mechanism in relation to the total amount of bile formed. This point must be considered in connection with the function of the gallbladder in which it is considered that the function is to produce a specific change in the character of the bile or in the metabolism of some constituent of it.

Anatomy of the Gallbladder—The most important features of the anatomy of the gallbladder which seem to have a bearing on its activity are (1) an excellent lymphatic system, (2) a mucosa arranged to bring the contents into intimate contact with as much of its surface as possible, and (3) a weak, diffuse muscular coat. Anatomically, the gallbladder seems to be best fitted for absorption, and the purpose of the muscular coat to keep the contents well mixed and in contact with the mucosa.

Pressure Changes in the Biliary Tract—It is important to know the course of the bile in the biliary tract, how and when the gallbladder fills, how and when it empties, and the pressure changes involved. In collaboration with Potter,⁷ I have studied the pressure changes in the gallbladder and common bile duct of dogs under different conditions, such as fasting, following the ingestion of various kinds of foods, and vomiting. At first we thought that the pressure in the component parts of the biliary tract was approximately the same. Accordingly, we studied the pressure in the gallbladder only. Under ether anesthesia, and employing sterile technique, a small, permanent rubber or metal cannula was placed in the gallbladder, the remaining portion of the biliary tract being left intact. In certain animals, the cannula was kept closed except while observations were being made, and in others it was left open continuously. While the wound around the cannula was healing, the animal was made comfortable and trained. When it had learned to lie quietly for hours, usually sleeping, a straight glass tube was connected with the cannula by means of a T tube. Observations were made of the rate of rise of bile in the tube, the maximal pressure produced, variations in pressure, and the rate of decline in pressure. The variation in the pressure in the gallbladder depended on several factors. It was always low when the animal was in the fasting state, seldom as much as 100 mm. It always increased

⁴ Rous, Peyton, and McMaster, P. D., "The Concentrating Activity of the Gallbladder," *J. Exper. Med.* 34, 47-73 (July) 1921.

⁵ Bollman, J. L., De Page, P., and Mann, F. C., Unpublished data.

⁶ Owing to the brevity of this paper, a complete bibliography is not given, but reference is made to a recent review of the functions of the gallbladder in *Physiological Reviews*, April 1924.

⁷ Mann, F. C., and Potter, J. C., Unpublished data.

after the ingestion of food, although the rate and amount of increase depended on the type of food. Milk usually produced the quickest, as well as the greatest, increase in pressure. Sometimes there were small rhythmic changes in intragallbladder pressure, involving a change of from 20 to 40 mm of bile, occurring from three to five a minute. We believed that these rhythmic changes were due to contraction of the gallbladder, although we were not able to prove it definitely. Observations were made on some of the animals two or three times a week for many months, and the results were fairly uniform. During this period, we thought that the pressure in the gallbladder and common bile duct was approximately the same. In order to prove this definitely, another series of experiments was performed, in which, besides placing a tube in the gallbladder, a small rubber T tube was placed in the common bile duct. In these experiments, therefore, the normal channel for the bile was not greatly interfered with, and we were able to observe the changes in pressure in the common bile duct and gallbladder at the same time. We were surprised to find considerable difference in pressure in the gallbladder and common bile duct, amounting often to 100 cm. The two pressures were usually the same for a short period, and then, rather suddenly, the pressure in the gallbladder increased greatly above that in the common bile duct, remaining so for many minutes. Often, there were rhythmic variations in pressure with opposite phases in the two component parts of the biliary tract, which suggested opening of the sphincter of the choleduct and contraction of the gallbladder, but we were unable to prove this. In certain experiments opaque mediums were injected into the gallbladder, and these changes studied by means of the roentgen ray. The results of these observations also suggested an interaction of the sphincter and gallbladder, but they were not conclusive.

The results of our numerous observations on the pressure changes in the gallbladder and common bile ducts have proved that the pressure in the gallbladder varies, depending on the digestion of different kinds of foods, and other factors, being greater during the first periods of digestion, and also that the pressure in the gallbladder and common bile duct may be quite different. Except for the discovery that the gallbladder seems to fill more rapidly during digestion, we have not been able to determine how the gallbladder fills or how it empties. Practically nothing is known concerning these two most important phases of the gallbladder's activity. It should be emphasized that, in our experiments, as well as in all operations on the biliary tract, caution is necessary in drawing conclusions because of the probability that operative trauma or pressure of a foreign body will greatly disturb the normal action of the gallbladder.

Rate of Secretion of Bile by the Liver, and Its Rate of Discharge into the Duodenum—The results of the observations of various investigators on the secretion of bile in animals with a bile fistula have shown that, while the rate is very irregular, the secretion is more or less continuous, and the rate increases during digestion. The rate of the discharge of bile into the duodenum indicates that during the interdigestive periods but little bile passes into the duodenum. The rate of the production of bile by the liver was estimated by suturing a small ureteral catheter in a hepatic duct under sterile anesthesia with sterile technic. As the lobes of the dog's liver are distinct, and usually drain through one duct, we were able to observe the rate of secretion of a

part of the liver without affecting the rest of the biliary tract or interfering with anything it might do bearing on the activity of the liver. We found that the rate of bile secretion by a lobe of liver, with the rest of the biliary tract left intact, varied, and the variations were usually rhythmic. Sometimes the liver, in the fasting state, secreted practically no bile, it was always much more active during digestion.

The Gallbladder as an Excretory Organ—In an endeavor to determine the manner in which the gallbladder filled and emptied, if at all, we employed some of the dyes that are excreted by the liver. Rose bengal, a deep red dye, gave promise of being the most valuable. It is readily excreted by the liver, is not quickly destroyed, and its color is easily followed by the naked eye. We have noted the appearance of the dye in the gallbladder immediately after intravenous injection, and again within five minutes after injection. Within an hour, the gallbladder was usually distended with the dye, and a quantitative estimation showed that approximately 50 per cent of the total amount of dye injected had entered the gallbladder by this time. The dye was present in the gallbladder as long as six days after injection in one dog, and had disappeared by the tenth day in another. There was approximately the same amount of dye in the gallbladder in the fasting and in the digesting state at the same time after injection. As this finding was so different from those in the experiments in which we studied the pressure changes in the biliary tract, we suspected the presence of some other factor. Accordingly, we ligated the cystic duct in several dogs, and then injected the dye. While most of the dye was excreted by the liver, it also appeared in the gallbladder with the cystic duct closed. This, of course, made our previous observations with the dye questionable as regards the filling and emptying of the gallbladder. However, we know definitely that the gallbladder can excrete one substance, rose bengal.

The Concentrating Activity of the Gallbladder—One of the most important phases of the gallbladder's activity, which was proved quantitatively by Rous and McMaster, is the power to concentrate the contents by the withdrawal of fluid. In this regard, the gallbladder may be considered a reservoir for storage, a place where an important change is produced in some constituent of the bile, or where a new product is added to it. If the gallbladder acts as a storage reservoir, it is highly probable that the concentrated bile is of some value.

The Chologogue Action of Bile Salts—The liver pharmacologically is rather a unique organ in that so few substances stimulate its secretory activity. The only substances that usually increase the flow of bile are bile salts. In our experiments these have almost invariably caused a marked increase in the secretion of bile, whether they were administered intravenously or through the duodenum. It should be noted that the bile salts are a normal constituent of bile, that the gallbladder bile contains a high percentage, and that they will stimulate the liver when given in amounts equal to that stored in the gallbladder.

HYPOTHESIS CONCERNING A FUNCTION OF THE GALLBLADDER

On the basis of the data obtained from our own experiments and from the results of the many carefully conducted researches of other investigators, an hypothesis of a function of the gallbladder has been formulated. My purpose in presenting this hypothesis is not, primarily, to assign to the gallbladder a special and specific

function, but to emphasize its functional importance, to correlate the known facts concerning its functional activities, and to point out the important fields in which data are still lacking. As an hypothesis it may not be correct, as a systematic statement of known facts, it should aid in eliminating the defects in our knowledge concerning the gallbladder. Most of the phases of this hypothesis are not new, but, rather, are emphasized in a new way and supported by additional data.

We have come to consider the gallbladder as a part of a mechanism whereby the secretory activity of the liver is correlated with that of the gastro-intestinal tract. It will probably be clearer if we describe how we think the gallbladder functions, and then emphasize the processes that have not as yet been proved.

In the fasting state preceding a meal, the liver is active, but the amount of bile secreted is relatively small. The gallbladder is partially filled with concentrated bile, a most important constituent of which are the bile salts. The sphincter at the end of the choleduct allows amounts of bile to escape into the duodenum only at infrequent intervals, and most of the bile secreted by the liver passes into the gallbladder. As soon as the ingested food passes the pylorus, the acid chyme causes the sphincter to relax, and coordinately with this, the gallbladder expels a small amount of its contents. The bile salts are quickly absorbed from the intestine, and stimulate the liver to increased activity. With the increased secretion of the bile, there is an increase in the flow to and from the gallbladder. With the stomach empty, and chyme no longer passing over the papilla, the sphincter opens more infrequently, and gradually the secretory activity of the liver is reduced to that of the fasting state. Practically all the bile secreted by the liver in the fasting condition is stored in the gallbladder by concentration. It therefore appears that the function of the gallbladder is to stimulate the liver to increased activity at the time the gastro-intestinal tract is most active.

In discussing this hypothesis of a function of the gallbladder, I wish to emphasize the following points as having some bearing on the question. Anatomically the gallbladder must be considered a sampling apparatus, in view of the fact that only a portion of the total amount of bile secreted ever enters it. The gallbladder is filled mostly during active digestion. This fact can also be considered as important in relation to the flow of bile and regulatory theories. The sphincter of the choleduct can as readily be considered a necessary mechanism for filling the gallbladder as for preventing the escape of bile into the intestine. The concentrating activity of the gallbladder would imply that some element of the bile is of value, and bile salts, as in the concentration in the gallbladder, are an efficient choleragogue. Evidence points to the fact that the secretory activity of the liver is correlated with the activity of the gastro-intestinal tract.

The most important objection to such an hypothesis is the question concerning the emptying of the gallbladder. Thus far it has not been proved that the gallbladder empties, or, in fact, that it can empty. A very suggestive method of studying this problem would be by an opaque medium excreted by the liver, as demonstrated by Graham and Cole.⁸ Furthermore, no reciprocal physiologic action between the sphincter of the choleduct and the gallbladder has ever been demonstrated, although many observers have suggested this as a pos-

sibility. Our lack of knowledge with regard to these two important phases of the physiologic action of the gallbladder makes the hypothesis definitely unproved.

We performed one series of experiments which gives some support to the possibility that the gallbladder bears some relation to hepatic activity. A small rubber T tube was placed in a gallbladder, and a ureteral catheter in a hepatic duct. After the tubes had healed in position, and the bile from one lobe of the liver was draining to the surface, the following experiments were performed. After an eighteen-hour fast, collections of bile draining from the catheter were made every fifteen minutes for an hour or more, in order to obtain the rate of flow in the fasting animal, then about 20 c.c. of bile from the gallbladder of another animal was slowly injected into the gallbladder of the animal under observation. In a very few moments, the flow of bile from the lobe of liver draining to the surface was greatly increased, and the total amount secreted after injection was usually two or three times the amount secreted during the control period. This experiment has been repeated several times on different animals, and the results have been uniformly the same.

ABSTRACT OF DISCUSSION

DR. MOSES BEHREND, Philadelphia. I have performed most of the experiments mentioned, but in some I have not formulated conclusions. From the clinical standpoint, I do not feel that the gallbladder is of any particular value to the human economy. We all know of many gallbladders, disclosed at operation, which were of no use to the patient. There are many young persons whose gallbladders are not functioning and many older persons with shriveled-up gallbladders that have not been functioning for a long time. Of what use has this organ been in their existence?

DR. CHARLES GREENE, Columbia, Mo. To what extent does this operative procedure interfere with the nervous mechanism and the reflexes from the gallbladder, and on what particular part do they show with some weight and significance?

DR. FRANK C. MANN, Rochester, Minn. Certain it is that the gallbladder has functions about which we know nothing, or virtually nothing. It is very easily damaged, and we may not even know that it has been damaged, but the effects will become apparent sooner or later.

Method of Demonstrating *Spirochaeta Pallida* in Tissues— A simple and remarkably expeditious method of demonstrating *Spirochaeta pallida* in tissues has been devised by Dr. Walther Kranz of the skin department of the University of Cologne. The method is a modification of the procedure of Levaditi, over which, however, it has important advantages. These depend on the fact that impregnation with the silver nitrate is carried out in the sections and not in the uncut tissue. The method is applicable to either frozen or paraffin sections, the material, of course, must be formaldehyde fixed. With frozen sections Dr. Kranz first washes in distilled water, then carries a number of the sections up to fifteen into a 0.1 per cent solution of silver nitrate in distilled water contained in test tubes, in this they are left in the paraffin oven for from four to twenty-four hours. They are then washed in distilled water and carried over into a solution consisting of pyrogallol, 0.2 gm., distilled water, 15 c.c., and mucilage of acacia 5 c.c. The reduction of the silver nitrate takes from thirty to sixty minutes, and should be controlled under the microscope, when it is complete, the sections are washed in running water to free them from the gum, carried through alcohol, and xylene, and mounted in the usual way. In dealing with paraffin material, the sections are first fixed to the slide and freed from paraffin, and then taken through the solutions as described above. No counterstain is necessary, and the picture is that of a Levaditi preparation. The whole procedure can readily be carried through within the period of an ordinary day.—*Lancet* 1 1119 (May 31), 1924.

⁸ Graham, E. A. and Cole, W. H. Roentgenologic Examination of the Gallbladder. J. A. M. A. 82: 613-614 (Feb. 23) 1924.

THE MANAGEMENT OF IMPETIGO
CONTAGIOSA IN MATERNITY
HOSPITALS *J HARPER BLAISDELL, MD
BOSTON

"Impetigo contagiosa is breaking out on Baby C in the nursery." To the hospital superintendent who has been through a previous epidemic of impetigo contagiosa, such an announcement brings immediate anxiety and fear, for she is confronted at that moment by the instant necessity for a change of routine in the nursery, a doubling or more in that part of the nursing personnel, and a ceaseless vigilance in the coming days, if this contagious disease is to be spared the other babies and even death warded off. And yet, in spite of the frequent occurrence of this important problem, the minutiae of treatment, so essential for the intelligent handling of these situations, are almost entirely lacking in the literature and the textbooks alike.

Knowles and Munson¹ review the literature on epidemics in institutions, and add to the series the details of three small outbreaks of impetigo in two hospitals under their own observation. Out of their ten patients, two died, but in both instances the deaths were complicated by infected harelip operations. The earlier literature reports mortalities of from 25 to 50 per cent in a series of about thirty cases. In my own experience, there have been six deaths in a total of 144 cases occurring in sixteen epidemics in eight different hospitals. Of these 144 cases, there were forty-three of the ordinary mixed impetiginous and pustular type in a summer hospital camp for infants and young children. None of these children died.

The etiology of the bullous type of impetigo appears to be well established. While the ordinary crusted type is due to a streptococcus infection, investigation has shown repeatedly that *Staphylococcus pyogenes-aureus* is found in the unbroken blebs of the infantile type. In this respect, the paper of Knowles and Munson¹ confirms the earlier work of Schwartz² and Cole and Ruh³.

The primary lesion of the bullous type is a small thin-walled bulla on a slightly inflammatory base. Following the early rupture of such a lesion, other lesions appear within a few hours. The crusting so conspicuous in the ordinary type is comparatively absent here. Within three or four days of the onset, a large proportion of the body may be involved, and the appearance in such cases is similar to a correspondingly severe burn. The constitutional symptoms also resemble those of burns. High temperature, bodily prostration and toxæmia follow. Death occurs usually in those cases in which more than one third of the body is involved.

Differentially, the diagnosis lies between impetigo and syphilis of the bullous type and pemphigus neonatorum. The latter term, pemphigus neonatorum, is synonymous with impetigo contagiosa of the bullous type and should be discarded. Nevertheless, it is regarded as a separate clinical entity by many not particularly interested in dermatology. In syphilis of the bullous type, other stigmas of the disease are usually

present. These include the appearance of the bullous lesions on the palms and the soles, mucous patches in the mouth, the characteristic semile face, enlarged liver, spleen or lymph nodes, painful joints, and the history of family infection. Many men regard the appearance of skin trouble in a new-born baby as equivalent to syphilis, and, of the deaths in this series, two children are buried today with death certificates reading "congenital syphilis" that should have read impetigo contagiosa of the bullous type. Under some conditions, such a mistake might prove of considerable embarrassment to both the hospital and the attending physician.

In the great majority of cases, it is impossible to tell the exact source of the infection. The disease descends over night on the ward without warning. In one instance, a nurse, returning from her vacation and going to work in the nursery with a patch of impetigo on her chin, started the infection, apparently. In another case, two small children with the disease, brought to the hospital to greet their newly arrived brother, were the source of the trouble.

If the disease is recognized in the early stages, the treatment of the individual is comparatively simple and the recovery prompt. The books still cling to the traditional ointment of ammoniated mercury in various strengths as the most effective medication. I myself prefer in these infant cases an ointment consisting of boric acid, one-half dram (2 gm.), precipitated sulphur, one-half dram (2 gm.), petrolatum 1 ounce (30 gm.). If the child is older than 18 months, 20 grains (1.3 gm.) of salicylic acid is substituted for the boric acid. Still more important than any one formula of medication is the gentle but thorough removal of the accumulations of exudate with soap from a tube, water and sterile gauze two or three times a day. Removal should not be considered as successful until a red and oozing surface is revealed.

Although the local treatment of this condition is comparatively simple, the management of the hospital end is one to tax the resources of ingenuity to the utmost. Fortunately, this disease is selective, attacking the babies with avidity but sparing adults that come in contact with it almost without exception. In this series, I can only recall four or five persons about equally divided between nurses and mothers that developed impetigo following contact with the affected babies. On those it did appear, the trouble was slight in extent and of the usual crusted variety.

But where the babies are concerned, impetigo contagiosa of the bullous type is contagious in the highest degree. It should take its place among the important contagious diseases of children, and be recognized as one of the very few contagious diseases to which infants are liable.

The conditions found in the usual maternity nursery are ideal for the spread by contact of a disease like impetigo. Ranged along the walls of a comparatively small room are small cribs so close together that the clothes of a nurse attending to a baby touch the adjoining crib. The babies are usually bathed and changed at a central point, either in the nursery itself or in an adjoining small bath room. Here the nurse takes each squalling youngster in turn, either holding him in her lap, or placing him on a common table. Until either wet or soiled, each child comes in contact with a common gown or table, covering. Close at hand are kept a few basins for the several babies, piles of diapers, bands and clothes, on a common table, and large receptacles holding the powder, safety pins, olive oil, cotton,

* Read before the section on Dermatology and Syphilology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

¹ Knowles F. C. and Munson H. G. Institutional Epidemics of Bullous Impetigo Contagiosa in Infants. Arch. Dermat. & Syph. 7: 376 (March) 1923.

² Schwartz. Bull. Living In Hosp. New York, June 1908.

³ Cole H. N. and Ruh H. O. Pemphigoid of the New Born (Pemphigus Neonatorum). J. A. M. A. 63: 1159 (Oct. 3) 1914.

eye washes, etc. There is often the nursery rectal thermometer, immersed for three quarters of its length in a tumbler of mercuric chlorid solution.

Yet, if an epidemic of impetigo is to be successfully combated, all these methods must be changed in a way that fills the heart of any hospital superintendent with depression at the thought of the tremendously increased labor and expense involved.

All the babies in the ward should be inspected from head to foot. Those showing any signs of the disease should be kept in the original ward. The remainder, those exposed to contagion but not yet showing any evidence of the disease, should be placed in another room. New arrivals after that date should be kept either with their mothers or in a third room. Under no conditions are they to be placed in any contact, no matter how remote, with either the infected children, the suspects or the old nurses. As members of the exposed group develop the disease, they should be transferred to the original infected nursery for treatment. As the length of time that it is necessary for a new-born child to stay in the maternity hospital is about three weeks, it will not be long before the exposed group will be eliminated, either by the appearance of the disease or by their going home without its having developed. Nothing is of greater importance than this method of segregation of the children. If new arrivals continue to be placed in the nursery in which the infection started or in the second nursery for the suspects, the length of time that the disease may continue to reappear is unlimited. One hospital in which the necessity for the strict observance of this rule was not appreciated had a practically continuous run of the disease for more than two years. Where separate rooms are at a premium, as they so frequently are in small hospitals, the necessity for giving over three rooms for nursery purposes works considerable hardship and expense. And then, if through faulty technic the third group of new arrivals breaks out, the added demand for new rooms will be greater than the possible supply, and it will be necessary to close the maternity department for the time being.

The nursing personnel usually has to be rearranged or materially increased to take care of the burden of the added work. The nursery should be "specialized" by nurses who do nothing but take care of the infected babies and their mothers. Under no conditions are these septic nurses to care for the well babies or any other patients in the hospital, or even go into the operating or delivery rooms. Conversely, extreme care must be taken that a clean nurse doesn't relieve her companions in the nursery for a few minutes while the pressure of work may be high and then return to her former work.

The technic of caring for babies is simple in principle but hard to carry out without constant thought of detail by the nurses and watchful supervision by the hospital heads. It is based on the fact that we are dealing with a contagious disease that is transmitted by contact with infected material. In other words, it is essentially making a surgical operation every time the baby is touched. With this end in mind, each child is, of course, in his own separate crib, and each crib is far enough from its neighbors so that the attending nurse may pass about it without her clothes touching the others. Each baby is to have its own separate tray with his own clothes and toilet articles, such as basins, soap, pins, powder, oil and thermometer. When it becomes necessary to attend a baby for any reason, the nurse

should wash her hands thoroughly with liquid soap and hot water. It is not necessary to perform a surgical scrub-up, but the washing should be thoroughly cleansing. She should then put on a clean surgical gown and attend the baby, as may be needed. It is not absolutely necessary that the gown should be sterile or that a fresh gown be put on every time she goes to the child, but it should be changed whenever wet or badly soiled, and at least once a day. After the baby has been cared for, the gown is removed, and the nurse should wash her hands after the operation as carefully as before. When she goes to a second child she should repeat the performance, taking care that she uses the gown belonging to the second child's unit. It is as important to go through this technic when the child is changed or carried to the mother for nursing as it is when the impetiginous lesions themselves are dressed.

Although the mother herself may not have the disease, she should be regarded as a source of infection. This is because, in the process of nursing the child, its infected clothes come in intimate contact with the mother and her bedclothes, and through them with the general materials used in her care. Thus, if a different nurse other than a septic nurse should care for the mother, she in turn could transmit the infection to a clean baby, a clean mother, or any one else with whom she comes in contact. In view of the number of times a day that it is necessary to minister to either a single mother or child, it is practically necessary to put a special nurse on every two or three cases.

Under such conditions, it takes considerable tact to handle the family, the visiting friends, and even these members of the visiting staff to whom the seriousness of this trouble is not familiar. No members of the family should be admitted to the nursery under any conditions. If the baby is with the mother when they are present, they should not touch the baby, the mother or the mother's bed. The attending physician must observe the same strict rules of asepsis. If he is to handle the child, he must wash thoroughly both before and after the examination, and under no conditions should he go from one child to another in the nursery or hospital without so doing. It is much preferable and equally practical for the nurse to hold the baby on her lap and turn it at will for the physician's examination. Under these conditions, if the physician will keep his hands in his pockets and regard the babies, nurse and cribs with the same respect that he pays to a sterile operating table, the visit may be made without any loss of time and without danger to other patients.

The disposal of contaminated clothes in a proper way is an important detail. Boiling is sufficient to prevent the possibilities of contamination. But it is essential that this laundering of the sheets, pillow cases, night clothes, diapers, gowns and towels be done separately from the routine hospital clothes.

One careless break in the technic may undo the careful work of days and start the contagion all over again. A little thing like the single omission of boiling a wash basin after the baby has been dressed may be the source of the spread. The use of a cake of soap, instead of an individual serving of soap powder or paste, will account for the continued breaking out of the impetiginous lesions on the individual baby, in spite of otherwise proper treatment. In one case, I recall a common bowl of safety pins, into which each nurse in turn put her contaminated fingers, as the probable focus of infection. The common practice of standing up a thermometer for three quarters of its length in a glass of some

antiseptic solution is very unclean. The upper quarter, well contaminated by the fingers of the nurse which have been held against the anal opening, is rarely cleaned or effectively sterilized.

At the end of an epidemic, the nursery in which the infected babies have been cared for must undergo a most painstaking and vigorous cleaning. Every bit of furniture must be scrubbed down with hot water and soap. The cribs should be taken apart if possible. All the furniture, including the mattresses, may well be taken out doors and exposed to the sun for several hours. Basins and instruments should be sterilized, and the cheaper containers, such as bottles and their contents, should be thrown away. The returning of various materials, such as throat sticks or pins, to the general supply should be prevented. The walls and woodwork should be scrubbed down as well, the ceiling should be recalcimmed. Although not an absolute essential, it is recommended that the entire nursery be repainted. In the skin ward at the Massachusetts General Hospital, there is a nursery room to which are admitted young children, including those with impetigo contagiosa of the usual type. If, as it has occasionally happened, the disease gets out of bounds and appears on the non-infected children, we have found that it saves time and expense in the end to close the nursery for a week and wash and repaint the entire room.

One further point that is far from easy to settle. What duty does the hospital with bullous impetigo contagiosa in its nursery owe to the community in the matter of admitting new maternity cases to the hospital while the disease is rampant? How many physicians would be willing to have their own wives confined in a small hospital where this disease was present, even if the strictest segregation was being observed? Very few, I think. What is the legal responsibility of a hospital when a baby contracts the disease, and perhaps dies, when the mother was admitted after the presence of the disease had been recognized by the authorities? To say the least, the hospital that continues to admit patients under such conditions is indefensible, unless it is carrying out the most effective means known to prevent the spread of this dangerous and contagious disease.

45 Bay State Road

ABSTRACT OF DISCUSSION

DR EVERETT S. LAIN, Oklahoma City. I appreciate the very thorough and detailed description of the methods that should be practiced, as delineated by the author. They may appear unnecessary, but when we consider the danger of death and the extremely embarrassing position it puts the obstetrician in to have this infection develop on the babe after birth with the possibilities of its transmission to others we can fully appreciate his advice. Our university hospital at Oklahoma City has had an outbreak or two of this trouble in which the obstetrician first tried to control it, then the pediatrician, and eventually the cases were turned to the dermatologist. In making the search for the infection we naturally followed first the sterilization methods of utensils, baths and the laundry. We were inclined to accuse the laundry, but could not prove this. We made many changes but had the impetigo with us still. We followed up everything we could think of, and finally came to the granite pans in which the infants were given their oil baths. I noticed some small cracks in the pans, and asked about the method of sterilization. I was told that they formerly used heat, but were then scrubbing them with compound solution of cresol. We abolished the use of the granite pans and had no new cases for many months. We are now trying a new treatment with very gratifying results. It is applications of

mercurochrome-220 soluble after a previous rupturing of the vesicles and removal of the crusts. Only two or three applications have been necessary in some cases. We have sometimes used only one application which was followed by a bland sterile wash, and it did away with impetigo.

DR JOHN E. LANE, New Haven, Conn. Dr. Blaisdell has given an excellent account of the precautions necessary for the prevention of the spread of this disease. The ointments used by Dr. Blaisdell are stronger than I have used lately. I have found that the weaker ointments, such, for instance, as a 2 per cent ointment of yellow mercuric oxide, serve as well as the stronger ones. For the early lesions, I much prefer a solution to an ointment. If the vesicles are broken as soon as they appear and painted with a solution of protargin mild or a 5 per cent solution of silver nitrate, they often develop no further. This is easier to apply than an ointment, and is not spread around. It is practically the same treatment as that suggested by Dr. Morrow for the ordinary impetigo of children, except that the strength of the solution is a little less. I prefer to have the nurse wear gloves. They do not need to be boiled between the handling of the different babies, but they are cleaned and approximately sterilized by washing on the hands much better than the hands are sterilized. I have always tried, not always with success, to have the babies kept from the breast till they are well, because I feel that there is considerable danger of a breast abscess developing if the mother is allowed to nurse the child.

DR H. E. MÉNAGE, New Orleans. In New Orleans, with semitropical temperatures and excessive moisture, babies suffer excessively from prickly heat, making them an easy prey to pus infections, so that impetigos, followed by furunculosis, are very common conditions. Thorough ventilation of the nurseries, the babies being lightly clad, kept dry and well powdered, goes a long way in keeping them free from the infection. When infection does occur, good results are obtained by the use of sulphurated potassa, from 15 to 60 grains (1 to 4 gm.), in a small tub of water. The lesions are brushed off in the bath, and the baby is allowed to remain in the water as long as possible, no soap is used. After the bath, the patient is mopped dry and kept well powdered with a mild saleylated talcum powder. In this manner we have been able to limit the spread of this disease, with small expense and a minimum amount of trouble.

DR CHARLES C. DENNIE, Kansas City, Mo. Tub baths should never be used for children with skin diseases since one is very likely to implant new areas of infection on the skin. The enamel slab and the hand spray should be used in every case of impetigo and furunculosis. In this way the infection is washed off and the slab is easily sterilized for the next patient.

DR J. HARPER BLAISDELL, Boston. The greatest difficulty we have is in trying to get the hospital authorities to recognize what they are facing. When a dermatologist comes into the hospital and orders such a general change in routine and arrangements, they carry it out just about half-way. It has been our experience that we might just as well cut off all of the dog's tail at once as to cut it off half way.

First Lying-In Hospital.—The first evidence of any specific provision for lying-in women occurs in the proposal of the Westminster Charitable Society, which in 1716 launched a scheme for the lodging, maintenance, and treatment of poor lying-in women in the parish of St. Margaret. In 1734 St. George's opened its doors but lying-in women were specifically excluded. But eighteen months after its foundation, a suggestion was considered by the governors of St. George's for setting aside one ward for lying-in women, to receive twenty-five cases. The project, however, did not mature. In July 1747, special wards on a separate floor were set aside at the Middlesex for married lying-in women followed in 1749 by the establishment of the Lying-In Hospital in Brownlow Street, Holborn and in 1750 by the City of London Lying-In Hospital in Aldersgate Street. But these likewise were for married women only.—Peachey. *Proc. Roy. Soc. Med.* 17:73 (Aug.) 1924.

THE VALUE OF BLOOD CHEMISTRY
IN PREGNANCY *

CHARLES W O BUNKER, MD

Lieutenant Commander, M C U S Navy

AND

JOSEPH J MUNDELL MD

Lieutenant M C U S Navy

WASHINGTON, D C

This study in chemical examination of the blood ¹ in pregnancy was begun with the idea that, by a systematic monthly blood examination, we might be enabled to discover some finding that would give warning of impending toxemia, possibly before the onset of clinical evidence. Accordingly, a number of patients, when they presented themselves for engagement for confinement, were started on the routine examination

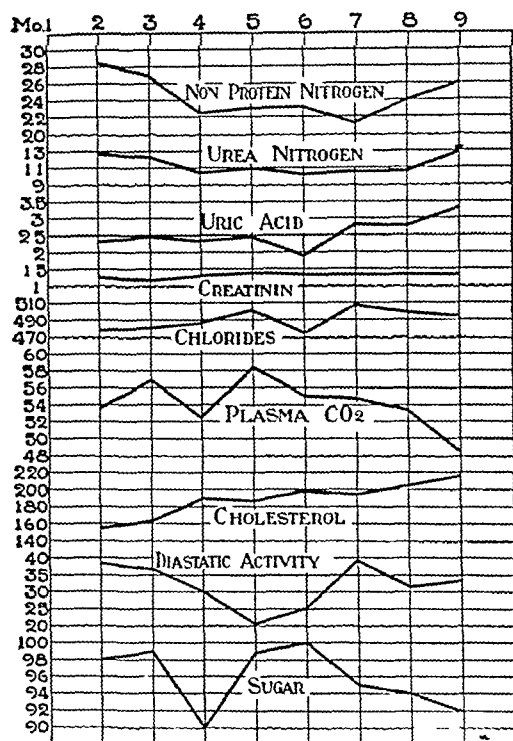


Chart 1—Monthly averages of normal group

which was repeated monthly. In the series, we observed fifty-two patients who had normal pregnancy and normal labor. However, there were in this group a number with only one examination, because of the inaccessibility of the laboratory. The results of our observations in this group of normal cases are given in Table 1. In Chart 1, we have plotted the curves of the monthly averages of this normal group.

For the second and third months there were only six estimations, but for each of the succeeding months there were from nine to twenty.

* From the laboratories of the Naval Medical School.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

¹ The technique for the chemical examination of the blood essentially followed that of Foline and Wu, including Whitehorn's method for chlorides and is based on whole blood except for plasma carbon dioxide. We also used essentially Bloor's method for cholesterol. Van Slyke's for carbon dioxide combining capacity (plasma carbon dioxide) and Winslow's for diastase. The results are expressed as milligrams per hundred cubic centimeters except for plasma carbon dioxide (per cent by volume) and diastase (Winslow's empiric units). The precise details of each determination will be found in Edition 7 of Stitt's Practical Bacteriology, Blood Work and Parasitology.

TABLE 1—Findings in Normal Cases

Case Number	Date of Examination	Month of Pregnancy	Nonprotein Nitrogen	Urea Nitrogen	Uric Acid	Creatinin	Chloride*	Carbon Dioxide, per Cent	Cholesterol	Diastatic	Sugar
1	9/16/21	2d	28	13	13	12	0.4-0		115	16	109
	9/23/21	2d									
	10/18/21	3d	28	14	18	12	0.4-0	49.3	133	16	100
	11/17/21	4th	20	10	17	12	0.4-0	51.7	133	16	83
	1/16/22	5th	20	10	17	12	0.510	51.7	133	16	109
	1/17/22	5th	18.7	14	14	12	0.530	51.7	133	16	109
	2/18/22	7th	18.7	14	14	12	0.511	51.7	133	16	109
	3/1/22	7th	18.7	14	14	12	0.511	51.7	133	16	109
2	9/1/21	1st									
	10/21/21	2d	22	12	20	13	0.460	51.49	151	16	100
	1/20/22	7th	23	9	17	12	0.490	50	133	16	83
	2/20/22	6th	23	8	22	14	0.790	47.5	133	16	83
	3/21/22	7th	19	8	24	12	0.410	48.2	133	16	83
3	10/18/21	3d	21	9	23	10	0.4-0	50.1	104	16	121
	11/18/21	4th	21	9	17	12		50.4	133	16	91
	1/14/22	5th	13	2.8			0.420	57.8	133	16	83
4	11/9/21	6th	18	11	12.2	15		57.6	173	16	121
	1/9/22	7th	7			11	0.4-0	66.7	167	16	100
	1/13/22	8th	6	10.5	2	12	0.400	57	147	16	83
5	11/10/21	3d	28	12.7	29	12	0.440	59.7	128	16	83
	1/6/22	5th	21	16	3	16	0.460	57.2	147	16	83
	2/7/22	6th	16	1.5	15	12	0.510	61.7	133	16	100
	3/1/22	7th	9	4		12	0.410	57.1	133	16	83
6	10/11/21	4th	8	15	21	13	0.410	52.2	140	16	100
	9/10/21	6th	21	11	20	14		53	111	16	100
7	9/21/21	6th	21	11	21	11	0.100		133	16	100
8	12/1/21	3d	20	14	38	13	0.460	59.6	167	16	83
	9/26/21	4d	20	15	1	11	0.4-0	77.3	133	16	100
9	11/2/21	8th	18	10	12	11	0.190	53.0	221	16	110
10	9/18/21	6th	17	13.5	21	11	1.4	62.3	133	16	83
	9/26/21	6th									
	10/18/21	7th									
	11/1/21	8th	1	10.7	29	16	0.180	56.8	167	16	100
	11/10/21	8th									
13	1/6/22	7d	1	17		12	0.190	49.4	133	16	100
14	9/8/21	6th	28	14	18	12	0.51	62.5	140	16	83
15	10/1/21	7th	21	14	2.5	13	0.51	50.5	133	16	100
	11/14/21	6th	19	9	17	11	0.490	57	133	16	100
	1/9/22	7th	9	14	15	12	0.480	53.2	133	16	100
16	10/1/21	7th	17	13.5	3	15	0.51	50.8	133	16	100
	11/1/21	8th	18	6	19	11	0.490	53.6	133	16	100
17	11/19/21	7th	20	12.5	2.8	17	0.490	51	170	16	100
	1/18/22	8th	21	12.5		17	0.490	51	170	16	100
18	9/7/21	5th	20	13	16	14	0.490	51.9	133	16	100
	11/3/21	7th	21	14	15	12	0.490	51.9	133	16	100
	12/1/21	8th	1	13	13	13	0.560	50.2	133	16	100
19	10/13/21	9th	14	14	27	13	0.520	50.2	133	16	100
20	10/13/21	4th	10	11	33	14	0.480	51	133	16	100
	11/1/21	5th	28	12	19	13	0.4-0	58.6	133	16	100
	12/7/21	6th	22	12	17	13	0.490	48.1	133	16	100
	2/10/22	8th	26	8	37	10	0.490	48	133	16	100
21	11/16/21	4d	21	10	2	11	0.440	57.0	133	16	100
	1/5/22	4th	10	10	25	11	0.460	48.3	133	16	100
22	9/20/21	8th	12	12	20	13	0.49	48.5	133	16	100
	10/12/21	9th	12	12	28	13	0.44	50.1	133	16	100
23	10/10/21	8th	10	17	28	12	0.51	50.6	133	16	100
	10/25/21	5th	29	11	17	12	0.4-0	57	133	16	100
	11/1/22	8th	10	17	13	13	0.600	57	133	16	100
26	1/20/22	3d	18	10.2	24	11	0.490	56	133	16	100
	4/7/22	5th	11	11	0	13	0.7	57	133	16	100
28	10/6/21	7th	18	8	18	13	0.490	50	147	16	100
	11/7/21	6th	18	9	4	13	0.490	57	133	16	100
	1/7/22	8th	10	8.3	1	15	0.480	49.4	133	16	100
	2/11/22	9th	10	8.3	5	13	0.480	50.4	133	16	100
29	10/8/21	6th	23	12	12	11	0.490	49.7	133	16	100
	11/14/21	7th	10	12	10	11	0.460	53.2	144	16	100
30	1/7/22	2d	13	17	17	11	0.510	53	144	16	100
	5/2/22	4th	20	10	17	11	0.510	49.3	133	16	100
31	10/7/21	6th	19	9	12	12	0.480	51.6	133	16	100
	11/2/21	7th	19	9	25	12	0.490	56.8	133	16	100
	1/9/22	6th	21	9	57	13	0.490	50.6	133	16	100
32	1/5/21	4th	19	6	25	12	0.440	50.6	171	16	100
	1/19/22	5th	20	6	27	15	0.4-0	56	171	16	100
33	10/11/21	6th	21	9	18	12	0.68	51.2	190	16	100
	11/17/21	7th	21	10	26	14	0.420	53.8	190	16	100
	12/1/21	8th	12	23				47.1	190	16	100
34	10/13/21	7th	29	11	32	11	0.50	81.8	191	16	100
	11/14/21	8th	18	11	23	11	0.410	50.1	140	16	100
35	10/6/21	4th	23	11	25	11	0.480	51.3	190	16	100
	10/13/21	4th	23	11	25	11	0.480	51.3	190	16	100
36	11/18/21	4th	23	11	25	11	0.480	51.3	190	16	100
	12/20/21	5th	23	11	25	11	0.480	51.3	190	16	100
37	1/23/22	3d	14	2	14	11	0.510	60.4	182	16	100
	3/20/22	5th	13	5	13	13	0.510	53	182	16	100
	1/17/22	6th	13	9.5	17	13	0.460	60.7	182	16	100
	2/28/22	7th	21	9	6	11	0.490	58.5	182	16	100
38	8/1/22	6th	21	11	11	11	0.520	48	182	16	100
	7/27/22	8th	22	5	22	12	0.510	54	182	16	100
	7/26/22	3d	23	10	18	11	0.510	40.3	182	16	100
39	8/8/22	8th	24	16	25	13	0.523		182	16	100
40	9/19/22	5th	21	11	10	13	0.470		151	16	100
41	1/18/22	8th	23	7	9.5	13	0.480	54	182	16	100
42	9/29/21	7th	23	17	19	13	0.490	41.9	199	16	100
43	11/17/21	8th	15	11	22	13	0.503		199	16	100
44	8/4/22	4th	25	9	17	13	0.520	54	208	16	100
45	10/1/21	6th	28	15	17	16	0.460	40.8	190	16	100
46	8/8/22	6th	25	10	23	11	0.512		208	16	100
47	12/7/21	3d	22	5	4	15		50	167	16	100
48	7/21/22	7th	20	12	2.2	12	0.590	50.1	167	16	100
49	9/27/22	7th	22	5	10.7	15	0.490	48.5	238	16	100

As compared with the normal nonprotein nitrogen range, from 25 to 30 mg per hundred cubic centimeters, our curve is interesting, though it bears out the generally observed and accepted finding, that is, a lower content than is found in nonpregnant women. We see here the high point, 28 mg per hundred cubic centimeters, during the first trimester, when clinically, the patient is most uncomfortable, adjustment not yet having taken place. Clinically, in the second trimester, we are accustomed to finding tranquillity and comfort. We likewise here observe the greatest stabilization in the nonprotein nitrogen curve, indicating the least disturbance in metabolism, even though it reaches its lowest ebb during this trimester. The last trimester again gives evidence of some disturbance, and a gentle elevation, as we might naturally expect, though even here our average reading, 26, is just about the low normal level.

Urea nitrogen, as found also by numerous other observers, runs a fairly level course, with very slight variations, and is always well within the normal limits, from 10 to 15 mg per hundred cubic centimeters, and in general bears the accepted ratio to nonprotein nitrogen, 50 per cent or less.

The normal uric acid content is accepted to be from 2 to 4 mg per hundred cubic centimeters. In our curve there is seen a steady gradual climb from 2.3 to 3.8 mg per hundred cubic centimeters. This distinct climb, especially in the last trimester, to the upper normal border, we regard as a most significant finding.

With respect to creatinin, whose normal range is from 1 to 2 mg per hundred cubic centimeters, we find practically a straight line throughout pregnancy, with little, if any, variation from 1.3 to 1.4.

In the chlorids curve there is a slight gradual rise from start to finish, but well within normal bounds, from 0.470 to 0.500 mg per hundred cubic centimeters.

The carbon dioxide combining power curve shows a definite downward trend, reaching a trifle below its low normal, 53 per cent by volume, and this evidently indicates a condition bordering closely on mild acidosis.

Next to the interesting uric acid observation, our most significant finding is the pronounced steady incline in the cholesterol curve. The normal content of cholesterol is given as from 140 to 170, though slightly higher in pregnancy. Our observations found it beginning at 155, and ending at the termination of pregnancy at about 220.

The curve for diastatic activity is higher than the accepted limits, and there is a decided sweep downward in the middle trimester, for neither of which have we a satisfactory explanation.

Though there are distinct wide sweeps in the sugar curve, which, likewise, we cannot explain satisfactorily, the trend is distinctly downward, but always within normal boundaries. We did not note hyperglycemia, as have some reporters.

As noted above, these curves represent the average in each month, but in some individual cases there were findings often bordering on abnormality (Table 1).

We think that the most significant observation in this series of normal cases is noted in Chart 2. Here is seen the almost parallel course of the curves of uric acid and cholesterol, which may open up a field for conjecture. It is not unreasonable to assume that the steady increase in the uric acid, especially in the last months of pregnancy, is indicative of an added strain on the kidneys, and, if this is granted, then there is a potential tendency toward mild toxicity even in normal

pregnancy. We have ample authority for stating that cholesterol possesses antitoxic properties, so it would seem that here we have a protective agency counterbalancing the toxicity as evidenced by the uric acid, simultaneously developing its forces throughout pregnancy and becoming stronger as confinement is approached, when it may be much needed.

The practical application suggested from this observation is that it would be a wise measure to prescribe a diet rich in cholesterol during the latter part of pregnancy, especially in those cases showing clinical evidence of a tendency toward toxicity at the same time that proteins are restricted.

That the cholesterol content of the blood may be increased or diminished by food has been clearly demonstrated by Georgine Luden of the Mayo Clinic, in experiments on herself. She enumerates, as being likely to increase the blood cholesterol, cream, butter, mushrooms, egg yolks, alligator pears, oatmeal, salmon, black bass, olive oil, codliver oil and other fats.

We have not done work along this line, but trust that the suggestion may stimulate some one to institute such an investigation.

It is interesting, though possibly of no significance, to note that Case 7 gave the lowest cholesterol reading,

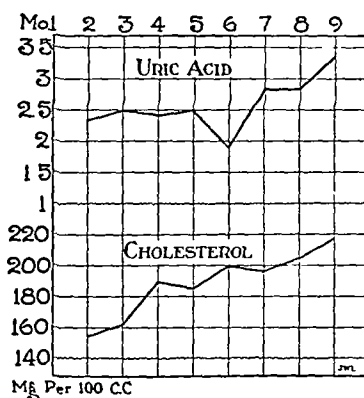


Chart 2—Uric acid and cholesterol in normal cases

111, at the sixth month. This patient, following a long labor at term, developed puerperal septicemia and was very ill for a long time, but recovered.

Our pathologic series comprises seventeen patients, presenting symptoms of toxemia, varying from mild toxicity to convulsions with deep coma. In Case 62, the patient came under observation at the second month, and we were able to obtain eight estimations. Most of the others were ward patients, admitted to Columbia Hospital on account of toxemia, and had not been previously studied. Three cases were in 1921, five in 1922, four in 1923, and five in the present year.

In Table 2 are given the toxemia cases. Under A, we have grouped the eclampsia cases. The five patients grouped here all presented clinical symptoms of classical explosive eclampsia: edema, high blood pressure, albumin, casts, convulsions and coma. Yet, in all these cases, the findings in the chemical examination of the blood are within normal bounds, and follow-up reports show that there are no resultant renal impairments. Patient 53, in 1921, was admitted at term in convulsions, and the blood was obtained within less than one hour of a convulsion. Both she and the child recovered. In 1922, she went through a normal pregnancy and labor, and is now having another apparently normal pregnancy. April 20, 1924, her blood pressure was 120

systolic, and 80 diastolic, urinalysis was normal. Patient 56 was admitted March 31, 1924, at the eighth month in convulsions, clinically eclampsia, but the laboratory reported normal blood findings. The patient died following a cesarean section, and the pathologist reported that the liver showed changes typically found in eclampsia with terminal acute nephritis, the liver lesions being the predominating factor. Patients 54 and 55 both were admitted at term with symptoms of

classical eclampsia, but, in both, the blood was normal on chemical examination, both patients recovered, and blood pressure and urine were normal on discharge. Case 57 might be classified possibly as preeclampsia, for labor was induced at the eighth month on account of headache, visual disturbance, edema, albumin and casts, and the blood pressure, which was 210 systolic and 130 diastolic, but the blood was normal. There is no evidence of renal impairment existing at present.

TABLE 2—Findings in Patients with Eclampsia and with Nephritic Toxemia

Case No	Date	Month of Pregnancy	Symptoms	Blood					Result	Present Condition
				Nonprotein Nitrogen	Urea	Uric Acid	Creatinin	Cholesterol		
A ECLAMPSIA										
53	9/20/21	Term	Admitted in convulsions	70	7	2.7	1.3	2.5	Recovery mother and child normal pregnancy and labor one year later now having normal pregnancy	Blood pressure 200 systolic 80 diastolic urine normal
54	9/29/21	Term	Admitted in convulsions	24	16	2.5	1.7	2.7	Recovery mother and child	Blood pressure and urine normal on discharge
55	3/28/24	Term	Admitted in convulsions	28	11	3.8	1.3	197	Recovery mother and child	Blood pressure 170 systolic 80 diastolic urine normal
56	3/31/24	Eighth primipara	Admitted in convulsions	30	12	3.4	1	209	Cesarean section died at necropsy liver showed findings typical of eclampsia terminal acute nephritis	
57	8/9/22	Eighth	Headache dizziness visual disturbance blood pressure 210 systolic 130 diastolic second pregnancy first normal	30	15	3.4	1.3	2.8	Recovery induced labor	Blood pressure and urine normal
B NEPHRITIC TOXEMIA										
58	3/24/24	Seventh	Two normal pregnancies 1 miscarriage February 1923 at fourth month well up to three weeks ago since then vomiting edema albumin	160	112	12	5	239	Died necropsy revealed cause of death to be purulent nephritis	
59	1/12/24	Seventh	Blood pressure 270 systolic 162 diastolic albumin and many hyaline and granular casts edema etc three pregnancies two stillbirths	60	30	5.5	1.4	224	Premature baby died in a few minutes	Blood pressure 240 systolic 130 diastolic heavy trace albumin hyaline casts
60	1/26/23	Sixth	Blood pressure 170 systolic 100 diastolic	50	10	4.4	1.2	223	Premature labor eighth month baby 3 pounds 10 ounces died second day	Urinalysis albumin blood pressure 170 systolic 80 diastolic
61	8/4/22	Eighth	Blood pressure 220 systolic 110 diastolic albumin 30 many casts quadripara two stillbirths	41	18	6.6	1.4	213	Premature delivery baby 8 months weight 3 pounds died in 56 hours	Blood pressure 170 systolic 100 diastolic albumin in urine
62	12/1/22 (Eight estimations beginning at second month)	Seventh	Blood pressure 200 systolic 140 diastolic choriorrhinitis first pregnancy convulsions	23	7.1	4.7	1.6	253	Premature delivery baby died third day	Blood pressure 200 systolic 140 diastolic albumin
63	7/24/22	Eighth	Toxic symptoms blood pressure 198 systolic 110 diastolic albumin .0 granular and hyaline casts three previous stillbirths	32	16	4.1	1.3	203	Died no necropsy	
64	10/13/21	Term	Blood pressure 210 systolic 124 diastolic edema toxic	25	12	6.2	1.3		Normal delivery	Unable to trace
65	3/19/23	Eighth	Convulsions	34	13	6.2	1.6	2.8	Stillbirth	Unable to trace
66	10/29/23	Seven and one half	Blood pressure 182 systolic 98 diastolic edema	32	13	3.8	1.6	1.9	Cesarean section recovery of mother and baby	Blood pressure 170 systolic 70 diastolic trace albumin headache backache edema
67	11/8/23	Term	Convulsions	32	14	4.3	1.9		Recovery of mother and child	Blood pressure 170 systolic 60 diastolic
68	3/24/24	Seventh	Marked edema blood pressure 190 systolic 146 diastolic albumin casts	70	12	4	1.4	209	Recovery of mother baby died in a few hours	Blood pressure 170 systolic 70 diastolic albumin present
69	3/1/22	Eighth	Marked edema blood pressure 180 systolic 140 diastolic albumin casts	32	13	3.3	1.3	278	Mother recovered stillbirth	Second pregnancy with normal labor at term December 1923 but with blood pressure 150 albumin and casts

Close scrutiny of cases grouped under B, nephritic toxemia, in Table 2, shows quite different blood chemistry pictures. Every case shows nitrogenous retention of varying degree. We are unable to trace two cases, 64 and 65. In each of the others, however, by follow-up, we have been able to demonstrate that a kidney lesion of variable intensity existed later, in a few cases as late as two years, and that, in all probability, in these cases the kidney lesion was the predominating factor in the causation of the toxemia.

Patients 59 and 61, from the clinical picture and by the present condition, each having high blood pressure and albumin and casts, are definitely nephritic with marked renal impairment. In these cases, the blood shows pronounced nitrogenous retention.

Patient 58 was profoundly toxic when admitted, the nature of the toxemia not being known, though it was not thought to be eclampsia. This view was confirmed at necropsy, which demonstrated the kidneys as the predominating lesion. Here, too, we have the chemical findings in the blood excessively high.

In Case 63 a necropsy was not obtained, but the history and the clinical picture clearly indicated that the toxemia was of nephritic origin, and here also the chemical examination of the blood showed a definite increase in nonprotein nitrogen and uric acid.

Patient 62 was known to have nephritis before this pregnancy in 1922, and we made eight chemical examinations of the blood during and immediately following the pregnancy, which terminated spontaneously at the seventh month. In each estimation, although the nonprotein nitrogen was low, the uric acid content was always high. This patient's present blood pressure, 200 systolic, 140 diastolic, is sufficient evidence that renal impairment exists.

In Case 60, the symptoms were not at all explosive, but throughout pregnancy there were constantly present evidences of smoldering mild toxemia. A previous pregnancy terminated with a stillbirth at the sixth month. In the patient's present condition, she is far from being robust, with blood pressure 130 systolic, and 80 diastolic. The nitrogenous contents of the blood were at the upper normal boundary, with the uric acid well over the border.

In Cases 66, 67, 68 and 69, the blood findings are not pronounced, but in each case the figures are around or just over the upper normal boundary, and the examination of these patients last month gave strong suggestive evidence that mild renal impairment still persists in each.

In this series of pathologic cases, it will be noted also that the cholesterol values are uniformly high. Again, we may assume that the cholesterol as a protective agency, as in the normal series, is being reenforced to exert its beneficial action in the face of such toxicity.

Chart 3 presents the average findings in our series. It will be seen how little difference there is between the graphs in the normal cases and eclampsia, and what a wide difference there is between eclampsia and nephritic toxemia. It, of course, must be emphasized that these graphs are based on our small series, and that possibly a larger series might give quite different diagrams.

Studying each report as it was made in this pathologic series, it was difficult to see that we were receiving any aid from this investigation. But by grouping the cases and by careful follow-up examinations, and then by viewing them at long range, as it were, we

were amazed to see the exceptionally low blood chemistry estimates in the frank, undoubted cases of eclampsia. On the other hand, we were struck by the observation that some of the patients presenting toxic symptoms, but in whom convulsive seizures did not seem to be in the least imminent, showed, on chemical examination of the blood, a decided nitrogen retention. Thus, we feel that we have been aided by the chemical examination of the blood together with the clinical picture and the follow-up examination, months later, in classifying these toxic cases into eclamptic and nephritic toxemia.

We realize that this will be criticized, on the score that previous investigators have reported many series in which they show marked evidence of nitrogen retention in eclampsia. Our response to this, however, is that we have carefully studied all such published reports in the Surgeon General's Library, but in none of them has conclusive evidence been adduced to show that the cases reported were not in reality nephritic. To quote these reports in support of this position would carry us far beyond our allotted space.

The analysis of this series of pathologic cases, though not, of course, sufficiently large in number to warrant making any dogmatic declarations, yet gives, we believe,

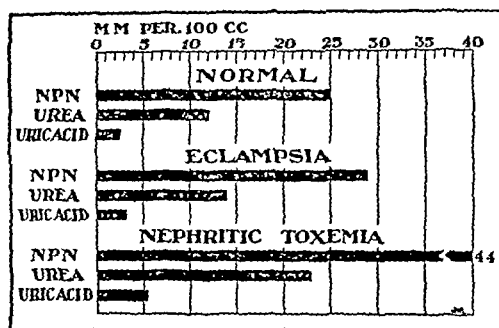


Chart 3—Average findings

findings suggestive enough to enable us to advance the following tentative observations:

- 1 Eclampsia probably does not produce any appreciable change in the blood chemistry.

- 2 If, in a case of toxemia of pregnancy, the blood shows decided nitrogen retention, either in the nonprotein nitrogen or in the uric acid, it is strongly suggestive that nephritis is the predominating factor in the toxemia.

ABSTRACT OF DISCUSSION

DR J P GREENHILL, Chicago. Similar studies were made at the Chicago Lying-In Hospital in more than fifty cases of late toxemia of pregnancy. While no attempt was made to differentiate cases of nephritic toxemia from those of other forms of toxemia, and while studies were made on those that were definitely eclamptic, no more information was given to us by the blood chemistry studies than we obtained clinically. The only frequent positive finding was an increase in the uric acid content of the blood. In the patients who were very toxic, there was a definite increase in the uric acid content and a number of these patients died. The creatinin, urea nitrogen and nonprotein nitrogen were practically normal regardless of the mildness or severity of the toxemia. The blood sugar in all the toxic patients studied was practically normal.

DR JOSEPH J MUNDELL, Washington, D C. As I tried to state, we did not make any dogmatic conclusions, but it seemed that we were aided in differentiating between eclamptic and toxic subjects.

SOME POINTS IN THE PHYSIOLOGY OF SMOOTH MUSCLE AND ITS NERVE REGULATION *

CHARLES W. GREENE, PH.D.

AND

C. D. BONHAM, A.B.

COLUMBIA MO

For test preparations we use the uterus of the rat, also segments of the rat's small intestine, chiefly the duodenum. The use of the rat's uterus for physiologic and pharmacologic purposes has been quite limited, although it is admirably adapted to the purposes. The rabbit and the guinea-pig have heretofore been the standard animals for this type of experimentation, but preparations from the rat are better.

Isolated segments of the rat's uterus, prepared by taking the horn and half the body of the organ, and mounting the right and left preparations in duplicate constitute unique test preparations. The segment should be mounted in a balanced mammalian salt solution, kept at body temperature, and constantly and evenly oxygenated. We have set up the preparations in Harvard warm chamber tubes, so arranged that a change of solution can be promptly and deftly made without disturbing the tension conditions. These tubes are mounted in a large water bath, kept at even temperature by a circulating system. Air has been used for aeration rather than pure oxygen, and has been thoroughly satisfactory. The rat's uterus gives, normally, about one contraction in two minutes, with superimposed variations at a faster rate of from one to three a minute.

The rat's uterus preparations are delicately sensitive to oxygen want. If a balanced saline solution deprived of its gases is substituted for aerated solutions, or if the aeration system is shut off, so that the oxygen in solution in the preparation tube is not renewed, then a normally contracting uterus promptly ceases peristaltic and also pendular contractions, if they are occurring. The tonic contractions of the preparation rapidly decrease, and a condition of extreme relaxation ensues.

If oxygen want is removed by a renewal of aeration, the uterus very promptly regains its fundamental rhythm, its pendular movements and its general contraction tone. Almost always, these preparations, following such a period of oxygen want, show an increased volume of contraction over the preceding normal period.

The rat's duodenal segment, treated by the conventional method used for the guinea-pig and rabbit by Cannon, or by Stewart and Rogoff, almost immediately displays two types of contractions when mounted in a balanced salt solution. The one is the very regular segmentation type which, in the record, is almost as rhythmic as cardiac movements, and contracts at a rate of about sixty a minute. The other type is that of peristaltic movements. These movements are sometimes complicated by pendular movements. If the aeration of this preparation is stopped, it, too, immediately relaxes, loses tone and becomes quiet. Sometimes slight segmental contractions continue for a time, but not always. On renewing aeration, the intestinal preparation quickly enters into a strong tonic contraction, with superimposed peristalses.

The particular point to be emphasized in this connection is the fact that the majority of these preparations are much more strongly and tonically contractile after a period of asphyxiation than in the normal. Oxygen want does more than simply deprive the preparation of the means for its normal metabolism. Whether by-products from incomplete oxidation, or whether other effects are left, the net result is a hypersensitive preparation.

Physiologic effects of variations in the salines in artificial solutions are known chiefly through studies of cardiac tissue, and to a lesser extent of skeletal and smooth muscle tissues. The rat's uterus and the intestinal segment are extremely sensitive to changes in the proportion of salts in a balanced solution. The important salts are, as in the heart, calcium and potassium. If an artificial solution containing 0.9 per cent sodium chlorid, and 0.026 per cent calcium chlorid is substituted for the balanced solution, the peristaltic contractions of the uterus increase in number, sometimes in amplitude but not always, and the tissue is thrown into a more persistent contraction tone. These changes are most constant when the temperature and aeration are constant. If the sodium chlorid solution containing calcium chlorid is now balanced by adding the usual amount of potassium chlorid of blood serum, the immediate effect is a complete relaxation and loss of rhythm for a few seconds only, followed by a reestablishment of rhythm and of more vigorous contraction amplitude than before. This seems to be a constant reaction phenomenon.

If, on the other hand, the salt solution consists of 0.9 per cent sodium chlorid and 0.03 per cent potassium chlorid, a different cycle of changes ensues. The tonic contractions gradually disappear, and the rhythm diminishes but usually does not wholly disappear for a long time, many minutes. The balancing of the solution by adding the necessary calcium salt in this case leads at once to the reestablishment of strong, vigorous contractions of the prenormal amplitude or greater.

Isotonic sodium chlorid alone will not support vigorous contractions of either the uterus or intestinal preparation from the rat. The most important change under the influence of sodium chlorid alone is a profound relaxation of tone.

These observations are certainly of significance to the clinical aspect of disturbances in both the alimentary canal and the uterus and its appendages. In circulatory stasis or respiratory inadequacy, in conditions of chronic anemia, or in the local conditions of intussusception or strangulation, or other sources by which the oxidation of the tissues is reduced below the normal level of efficiency, it is obvious that we may expect profound disturbances in the regulation and activity of the alimentary smooth muscle and of the muscle of the urogenital system. It would seem that the factor of saline balance is of equal importance in the alimentary mechanisms and in the urogenital musculature as in other better known regions of the body. Calcium treatment, as recently stressed, involves this alimentary muscle factor.

The control of the automatic movements of the alimentary canal has been elucidated largely by the epoch-making work of Carlson and by numerous workers in his laboratories. The anatomic work of Kuntz has done much to help us understand the nerve relationship in the intestines, while Ranson's work of the last few years has clarified the field of the autonomic nerve mechanisms, not only of the alimentary canal but of the body in general.

* From the Department of Physiology University of Missouri School of Medicine.

* Read before the Section on Pathology and Physiology at the Seventy-Fifth Annual Session of the American Medical Association Chicago June 1924.

In isolated uterine and intestinal segments, we believe that the operative local conditions are essentially the same as those that hold in the body. Of course, the central nervous influences are eliminated. In the segment preparations, we always have the problem as to whether the movements are nerve controlled or inherently muscular. This problem has not thus far been satisfactorily solved. However, the nature of the response is better understood when we consider the behavior of the organ under certain well known specific drugs. We have the impression, from the character of response in experiments, that the effects both of asphyxiation and of unbalanced salt solutions, on the intestinal segment and the uterus of the rat are largely a response to the influence of these conditions on the intrinsic nerve mechanisms. The chief basis for our belief is the promptness of the onset of the response and of its elimination in the recovery stages. It is scarcely conceivable that these movements should be carried out without greater disturbances of coordination within the preparation, if muscle alone is the agency through which asphyxiation and the saline act.

This view is strengthened when we test the preparation against drugs, and we would mention for illustration digitalis, which has scarcely received adequate recognition for its influence on the motility of the alimentary canal. Duodenal segments respond somewhat inconstantly to digitalis. Sometimes the contractions are inhibited as promptly as though extrinsic inhibitory nerves were stimulated. Again, the contraction rhythm is rapidly augmented and the tone is increased. These differences depend on the concentrations of digitalis used on the segment. Weaker doses inhibit, while toxic doses always stimulate the intestine to vigorous contractions.

Velyien Henderson has recently emphasized the importance of such drugs as pilocarpin, and especially physostigmin, in this relation. He advocates the use of physostigmin to remove alimentary inactivity, cautioning against the extreme toxicity of this drug. Physostigmin augments the rhythm and amplitude of the segmental contractions of the duodenal preparations, stimulating the parasympathetic and enteric nerve endings. The type of response is quite comparable to that occasionally observed under stronger digitalis.

These drugs, especially digitalis, also react on the uterine preparation. The contractions are augmented. The rat's uterus lends itself to testing by such well known drugs as epinephrin, ergot, histamin, ergotoxin and barium chlorid. Under each of these, the response of the rat's uterus is so prompt and pronounced and characteristic that one can scarcely escape the view that it is nerve initiated rather than directly muscular. Even barium chlorid, which has come to be accepted in the literature as a direct stimulator of smooth muscle, belongs in the nerve classification just given. Henderson has argued that it is somewhat gratuitous to charge the vigorous contractions of smooth muscle under barium chlorid to direct muscle influence alone. Barium salts, like digitalis, not only stimulate the terminal tissue but often produce greater changes by stimulating the nerves controlling the tissue.

CONCLUSION

We emphasize the underlying metabolic conditions and the mechanisms controlling the reactions of smooth muscle in such complicated organs as the alimentary canal and the urogenital system. Laboratory experiments on asphyxiation, on balanced salt solutions, and

on pharmacologic preparations give a more tangible basis for interpreting the physiology underlying not only the normal, but also the pathologic conditions that clinicians must combat.

ABSTRACT OF DISCUSSION

DR J M FRAZIER, Belton, Texas. We are taught that muscle tissue is divided into three kinds, and that the heart muscle fiber differs from the others in not having the sarcolemma. Incidentally, in examining the human heart muscle fiber, I found one with sarcolemma, and became much interested in the development of muscle fiber. I examined the hearts of accessible living animals, domestic and from the zoo, and found more fibers with a sarcolemma in the rabbit and in lower forms of animals, such as the bat. Textbooks state that there is no sarcolemma. Looking up the bibliography of this subject, I found that a German, F N Winkler, reported he had found a sarcolemma in the human heart muscle fiber. I believe that a sarcolemma ordinarily exists as an anomaly in the heart muscle fiber. If it did exist in the human heart, the subject, had he known it, could have controlled his heart action. There have been such cases. It is also known that hypnotists can control heart action in a favorable subject. I do not know in which hearts they are able to do that. Ordinarily, it is an involuntary muscle. The anomaly in the heart would be a reversion to a lower form of animal life.

DR CHARLES W GREENE, Columbia, Mo. Whether we assume the colloidal emulsoid theory of the nature of the living protoplasm or not, clinicians will have to recognize that the variations in the saline balance influence the functional activity of these peripheral motor tissues. Part and parcel of the same process is a change in responsiveness of the same tissues to nerve regulation, and nerve coordination and nerve control.

CEREBRAL MALARIA

REPORT OF AN UNUSUAL CASE

OTTO TIEMANN BROSIOUS, MD

BARRANQUILLA, COLOMBIA

To those who have had experience with tropical malaria, the protein nature of this disease is only too well known. Its syndrome, its wide range and its variation of symptoms and signs, together with its complex symptomatology are as complicated as those of syphilis, and it is as dangerously imitative of symptoms and syndromes of other maladies, for which reasons it is not always one of the easiest diseases to eliminate in a difficult differential diagnosis in tropical medicine.

Many self-explanatory names have been assigned to the various forms of pernicious type of subtertian or estivo-autumnal malaria, such as hyperpyrexial, the delirious and comatose, the aphasic, convulsive, tetanic, epileptiform, apoplectic, general paralytic, meningeal, and the cerebellar and bulbar types. In 1917, I¹ reported a case presenting all the signs of anterior poliomyelitis. Various psychoses and memory disturbances, as well as impairment of good judgment and reasoning, have been directly attributed to cerebral malaria. The case under discussion is still a new and distinctive type, involving and complicating two of the forms named above.

REPORT OF CASE

A boy, aged 10, a mulatto and a native of Colombia, was brought into the hospital of the Pato and Nechi Mines, Colombia, Ltd, March 23, 1924 in a semiconscious state with convulsive seizures, screaming frantically at spasmodic

¹ Brosious O T. Cerebral Malaria. J A M A 68:106 (Jan 13) 1917.

intervals. Obtaining a family history or a past history of this type of patient is usually difficult, and this case proved to be no exception to the rule save that the patient was known to have had several attacks of fever previously.

Regarding the present illness, his mother stated that the child had not been to school for three days because he had had a slight fever and headache, associated with a peculiar drowsiness, but believing it not to be serious she administered home remedies of herbs and decoctions of various kinds. About two hours before his admission to the hospital he became suddenly very ill, with a high fever and convulsions, and soon became unconscious.

The child was well developed and well nourished and was in a state of opisthotonos and even orthotonos. His head was retracted, and his eyes rolled constantly upward. These signs with intermittent tonic spasms preceded by frantic cries after which a typical risus sardonius would be assumed caused us to search most carefully for some wound or abrasion, or some sort of infection, without result. Dermographia was present, and, between spasms the orthotonos relaxed sufficiently for us to try the Kernig sign, which was markedly positive. The patient did not regain consciousness between attacks. His temperature on admission was 38.8 C by axilla, and the pulse was 108. A clonic spasm usually though not always, followed the tonic convulsions and any handling whatsoever of the patient whether during examination or in the giving of treatments, brought on the loud terrified cries with a fearful upward rolling of the eyes followed by the spasmodic attacks. There were no paralyses. The rigidity of the neck persisted even during the intervals between the convulsions.

Further physical examination revealed otherwise negative findings of the region of the head neck scalp, ears, nose and mastoid. The pupils were equal and normal and reacted to light. There were no glandular enlargements. The teeth were generally in bad condition and the tongue bore a thick whitish coat.

Dermographia was the only unusual feature presented by the skin, which was otherwise perfectly clear, but also hot and dry. Petechiae could easily have been obscured by the color.

The heart and lungs were normal but the respirations were deep and labored and at times stertorous and irregular and the pulse beats, though regular were full and strong.

The enlargement of the spleen, which was hard, down to the umbilicus was the only positive finding in the abdomen. The knee reflexes were both increased during relaxation in the intervals between the convulsions.

A blood smear taken immediately after the physical examination, and stained by Hasting's method, showed the presence of both the malignant and benign tertian parasites. The hemoglobin was 70 per cent, and a white blood count simultaneously made was 11,200. A differential white blood count showed polymorphonuclear neutrophils, 48.5 per cent, large mononuclears, 18.5 per cent, large and small lymphocytes 29.5 per cent, eosinophils, 3.5 per cent.

An intravenous injection of 6 grains (0.4 gm) of quinin dihydrochlorid was given immediately and repeated twice that day after four hour intervals. That evening the temperature rose to 39.2 C by axilla.

The following day, March 24 a slight amelioration of symptoms was noted, in that the convulsions and the frantic cries did not occur so frequently. The temperature by axilla ranged between 37.8 and 38.8. Because the neck still remained rigid, and the head retracted, a lumbar puncture was done and some of the fluid, which was clear and under pressure, was drawn off. The cell count was 5 to the cubic millimeter. Three more intravenous injections of quinin dihydrochlorid of 6 grains (0.4 gm) each, were again administered at six hour intervals.

The temperature by axilla on the morning of March 25 was 37.6 C, and did not rise above 38.2 that day. The quinin was administered in the same way as on the preceding two days. There were no more convulsions, and the patient spoke a few words and took a little broth although a slight rigidity of the neck still persisted, as well as an accompanying retraction of the head. The frantic cries, as well as the tonic

spasms followed by the clonic convulsions, had discontinued after the lumbar puncture.

By the morning of the fourth day, March 26, the patient had regained complete consciousness. The temperature also had fallen to normal and, save for a slight pain in the upper spine, there was a complete cessation of all signs and symptoms. The urine was normal, but a stool examination showed the presence of *Ascaris lumbricoides*, for which the patient was treated at a later date. Quinin dihydrochlorid was now given by mouth, three times a day, in 6 grain (0.4 gm) doses, for six days more. Then 5 grains (0.3 gm) was given three times a day for ten days, after which, for ten days more 5 grains (0.3 gm) was given mornings and evenings. Hereafter a tonic was administered.

The case is illustrative of the fact that blood smears should be examined in almost every case in tropical lands, and that cerebral malaria should not be too quickly eliminated in a difficult differential diagnosis.

Pinto Mines Apartado 104

Clinical Notes, Suggestions, and New Instruments

TWO CASES OF AMYOTONIA CONGENITA OCCURRING IN THE SAME FAMILY

GERALD R. ALLABEN, M.D. ROCKFORD, ILL.

These two cases of this rather rare condition are of interest owing to the fact that heredity, or a familial tendency, has not been noted in the cases heretofore reported.

REPORT OF CASES

CASE 1.—M., a boy of normal delivery, born in the summer of 1920 breast fed at the age of 6 months was brought to the hospital by the mother, who complained that he made no effort to raise himself, and was unable to sit up. She stated that he nursed normally and seemed cheerful, and that he had been gaining rapidly in weight, and had had no digestive disturbance.

The baby was large, bright and happy in appearance. There was inability to sit up, or even to hold the head up unsupported. He was able to move the hands and feet a little, but offered no muscular resistance to attempts at passive motion. There existed apparently, a hypertrophy of the muscles of the extremities with a flaccid condition of all the muscles. Knee jerks were absent. Sensation to pain was apparently normal. Electrical reactions were not tested at this time but later, tests showed characteristic decrease in contractility. Blood examination showed hemoglobin, 70 per cent, red blood cells, 4,848,000 and white blood cells 12,000. No abnormalities were noted in the differential count, or examination of the blood smear. A specimen of urine was negative. The Wassermann test was reported incompleimentary, although, later, the Wassermann reaction was reported negative. Roentgen examination of the spine was negative, the chest showed an unusually wide aortic shadow, and there was a suggestion of some enlargement of the thymus gland. There was no clinical evidence of aneurysm.

The father and mother were well. There were two girls under 6 years of age, both normal, with the exception of the presence of a marked strabismus in the younger. One boy had died at the age of 16 months, with symptoms described by the mother as identical with those evidenced in this case, although the death certificate had been signed as a tuberculous meningitis. The Wassermann reaction of the father was reported as doubtful, and of the mother, as negative, although later Wassermann tests were reported negative in both cases. A later report on the family history stated that the mother had a definite anaphylactic reaction to dandelion, and that her mother suffered from hay-fever. The child's mother had also been subject to attacks resembling paroxysmal tachycardia.

A diagnosis of amyotonia congenita was made. Later, the child was examined elsewhere. Radium was advised to reduce the size of the thymus gland, and he was given one exposure. A short time later, the child contracted pneumonia, and promptly died. No necropsy was obtained.

CASE 2—Another boy was born to these parents, June 22, 1922. Dr. A. G. Athens Buhl, Minn., who was in attendance, reported that the delivery was normal, easy labor lasted eight and one-half hours, the position being left occipito-anterior. After ten days, the mother and child left the hospital in good condition. Five months later, the baby showed a disinclination to use the legs and arms, and to hold the head up. This weakness gradually increased, though the child continued to gain in weight, and was apparently otherwise perfectly well. There were no signs of atrophy, nor were the cranial nerves involved. Knee jerks and all other deep muscle reflexes were absent. The Babinski reflex and the Kernig sign were negative. The family objected to blood and spinal fluid examinations. There was no doubt about this being a case of Oppenheim's disease.

The mother, in her desperation, turned to Christian science, and the child died a few months later.

It is worthy of note that these two cases, and possibly a third, all occurred in male children in the same family, whereas, two female children in the family showed no signs of the disease.

ATYPICAL MUMPS

WILLIAM L. GOULD, M.D., ALBANY, N. Y.

Recently, a woman, aged 20, married, came to me complaining of pains and swelling in the left side of the body. Three weeks before, she became ill. On arising one morning, she was seized with headaches, dizziness, nausea and pains in the back, legs and abdomen. Within twenty-four hours, the left side of the body became painful, tender and swollen. On examination three weeks later, at my office, there was found a typical acute inflammation of the left parotid gland. The left breast was painful, tender and somewhat indurated. The left upper and lower extremities were generally, but moderately, tender and swollen. The swelling was more acute for the first week. The affected parts had constant, cramplike pains, and were not discolored. On the nineteenth day after the onset, the tongue became swollen, this condition lasting throughout one night. The pains in the epigastrium, which came especially after meals, the nausea, belching and, also, the "awful headaches and dizziness" lasted through the illness. After four weeks of ailing, the patient made an uneventful recovery. All signs and symptoms disappeared fairly rapidly in the last two days. At no time was the patient confined to bed.

Two weeks previous to the onset of the illness, the patient's sister had a typical attack of mumps.

This case is atypical and unusual in that but one parotid gland was attacked, with a complicating metastasis to almost the whole of the same side of the body, the opposite side remaining entirely free.

203 Madison Avenue

PHENOL POISONING FROM INK

CAREY P. MCCORD, M.D., AND DOROTHY K. MINSTER, A.B.,
CINCINNATI

E. M., a girl, aged 18, a shoe worker, was brought to us, July 10, with multiple second degree burns on her face, neck and breasts. The patient stated that her work was the numbering and lettering of pieces of leather used in the manufacture of shoes. In opening a bottle of the marking ink she splashed a liberal quantity over her body. Water and a common alkali soap were used in an attempt to remove the ink stains.

When seen by us, the patient, in addition to extensive burns over the major portion of her face, neck and chest was depressed, weak and suffering from a headache, and presented an increased heart rate with a feeble pulse. Her condition of collapse was out of proportion to the extent

of external injury. An odor of phenol (carbolic acid) was present on the patient's clothing, and it was established that this was the characteristic odor of the ink employed. Following this information, treatment, both local and general, was instituted with resulting early recovery.

A subsequent investigation led to the finding that concentrated phenol is widely used in the manufacture of marker inks. Phenol serves as an excellent solvent for the pigment employed and in addition, is valuable for its etching effect in the marking of substances, such as smooth leather, that do not readily "take up" ink. The concentration of phenol in the specimen examined was sufficient to produce injury readily if applied to the skin of the worker. The extent of the injury in this reported case was probably increased through the action of the alkali water used to remove the stains, as under such conditions hydrolysis takes place intensifying the harmful properties of phenol.

Should this kind of marker ink come into extensive use there will exist a definite occupational disease hazard calling for precautionary measures.

34 West Seventh Street

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY

PITUITARY SOLUTION-WILSON (See New and Non-official Remedies, 1924, p. 229)

The following dosage form has been accepted:

Ampoules Pituitary Solution Wilson 0.5 Cc.

THIOSINAMINE—Thiosinamina—Allyl Sulphocarbamide—Rhodoline—(NH₂)CSNHCH₂CH₂CH₂—Allylthiourea

Actions and Uses—Thiosinamine is being used against arsenphenamine dermatitis (Thiosinamine in the Treatment of Arsenphenamine Dermatitis, S. S. Greenbaum, J. A. M. A. 83:38 [July 5] 1924). This use is still in the experimental stage.

Thiosinamine was originally introduced to promote the absorption of scar-tissue lymphatic swellings, etc. Clinical opinions as to its efficiency are contradictory, but its restricted use indicates that it has little, if any value for this purpose.

Although it is usually well borne, except for the bitter taste and acid eructations, it may produce toxic systemic effects (digestive disturbance, lassitude, fever, J. A. M. A. 56:835 [March 18] 1911), and these may set in suddenly after it has been used for a time without toxic effects. In animals relatively small doses produce severe changes in metabolism and parenchymatous degeneration but without evidence of connective tissue changes. Larger doses impair respiration (Tyrode, *Arch. Internat. Pharmacol.* 19:195, 1910).

Dosage—Against arsenphenamine dermatitis, Greenbaum recommends 0.2 Gm. dissolved in 6 Cc. of distilled water with the addition of 1 or 2 drops of a 2 per cent solution of glycerin, injected daily, by vein.

Thiosinamine occurs as white glistening prismatic crystals having a garlic-like odor and bitter taste. It melts at 70 to 74 C. forming a colorless liquid but at higher temperatures it yields white vapors alkaline in reaction to moist litmus paper and a carbonaceous residue. It is soluble in water (1 part in 17 parts of water), freely soluble in alcohol (1 part in 2 parts of alcohol), not so soluble in ether. Thiosinamine is hydrolyzed by water.

Boil 1 Cc. of the saturated aqueous solution with 1 Cc. of sodium hydroxide solution for two minutes, acidify with acetic acid and add 1 Cc. of lead acetate solution; a black precipitate of lead sulphide forms.

Add 3 Cc. of mercuric chloride solution to 1 Cc. of the saturated aqueous solution; a white precipitate forms when heated in the test tube to boiling over a bunsen flame no discoloration takes place. Add 1 Cc. of mercurous nitrate solution to 1 Cc. of the aqueous solution; a gray precipitate forms which on making the solution ammoniacal turns yellow then dark again. Add drop by drop 0.5 Cc. of silver nitrate solution (25 per cent) to 1 Cc. of the saturated aqueous solution; a milky white precipitate forms then add slowly 3.5 Cc. of silver nitrate solution; the precipitate first dissolves in excess of the reagent then a voluminous white or brownish white precipitate forms; heat the test tube containing the precipitate over a bunsen flame; a silver mirror forms on the glass.

Ignite about 2 Gm. of thiosinamine, accurately weighed, the ash should not be more than 0.05 per cent.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 13, 1924

WATER BY MOUTH FOR FEVER IN THE NEW-BORN

Clinicians have been somewhat slow to appreciate in a practical way that water is required in the body not only for the urinary elimination of waste products but also for the removal of heat. The latter phenomenon of itself involves the continued elimination of a considerable amount of water, which takes place even though it may necessitate a desiccation of the body tissues and fluids. Loss of water by evaporation from the respiratory tract and mouth is inevitable, unless the air inspired is saturated with water vapor at body temperature. A large portion of the body heat is usually dissipated by evaporation of water from the skin, the amount removed in this way varying widely according to the environmental conditions. As Marriott¹ has pointed out, severe anhydremia is especially likely to occur in infants. This is due in part to the fact that they have a high water requirement, which must be covered. Furthermore the infant is entirely dependent on others for water administration, and may be offered an insufficient amount. Newly born infants, nursing at the breast and receiving no fluid from other sources, frequently become somewhat desiccated, owing to an insufficient water intake. In any infant, the presence of infection is likely to lead to refusal of food, vomiting and diarrhea, with a resulting anhydremia.

When the blood and tissues become concentrated by water loss, the amount of water available for evaporation is diminished, and, as Marriott has further suggested, ultimately becomes less than that required for removal of the heat of metabolism. Fever then occurs. On this basis, the fever occasionally encountered in new-born infants has been explained, although it should be said that not all writers are willing to assign anhydremia as the sole cause of the high temperature. However, various pediatricians have reported that the febrile temperature can be lowered readily by administration of water. According to Bakwin, Morris and

Southworth² of Cornell University Medical College, New York, whereas in afebrile new-born infants, the protein concentration of blood serum is fairly constant, usually lying between 6 and 7 per cent, in the new-born with fever, the serum proteins are generally above 7.5 per cent and often over 9 per cent, indicating a marked diminution in the plasma water. When fluid was given orally (usually by gavage) to the new-born exhibiting febrile temperature, in the proportion of from 30 to 40 c c per kilogram of body weight, a prompt fall in the temperature and blood concentration followed with great regularity. The temperature usually reached normal within from thirty to ninety minutes. When the fluid was given hypodermically or intraperitoneally, the effect on the temperature and blood concentration was neither so marked nor so regular as after water by mouth.

The greater efficacy of the oral administration of water deserves emphasis at a time when all sorts of parenteral routes are frequently chosen for the introduction of remedial agents into the body. There are unquestionably times when intravenous injections are life-saving, or subcutaneous medication is imperative, but we are in danger of forgetting how excellent and prompt absorption may be from the alimentary tract that Nature has primarily provided for such a function.

Water drinking is not a cure-all. Water given by mouth, in amounts similar to those used in the new-born with fever, has practically no effect on the temperature of infants with fever due to various infections. Yet, according to Bakwin, Morris and Southworth, even in older infants, dehydrated as a result of severe diarrhea, fluid by mouth was much more effective in reducing the concentration of the blood than fluid given by hypodermoclysis or intraperitoneal injection. Simple methods should not be overlooked merely because clinical technic has succeeded in adding many new operative procedures to the possibilities of practice.

THE NEWER STUDY OF PANCREATIC FUNCTION

For many years the chemical diagnosis of abnormalities of the pancreatic function lagged far behind that of the gastric activities. The reasons for this are not far to seek. Since the introduction of the stomach tube, the withdrawal of gastric contents, under a large diversity of conditions, for chemical examination has become comparatively easy, and has accordingly entered the domain of clinical application. To this has been added the advantage of roentgen-ray observations that supplement the other types of evidence regarding gastric conditions. The development of the use of the duodenal tube for securing the mixed secretions that pour into the upper intestinal tract has furnished a new

1 Marriott W M. Anhydremia. *Physiol Rev* 3: 275 (April) 1923.

2 Bakwin, H, Morris R M and Southworth J D. The Effect of Fluid on the Temperature and Blood Concentration in the New Born with Fever, *Am J Dis Child* 27: 578 (June) 1924.

procedure for studying the secretions of the pancreas and the liver, and has thus brought them in closer range for the consideration of possible deviations from the normal. The judgment of the adequacy of the pancreatic functions, so far as they affect the digestive processes, is thus no longer limited to data derived from a study of the stools.

Of late, it has become comparatively easy to study the enzyme concentrations of the duodenal contents obtained by the use of the gastroduodenal tube. The position of the latter can be verified by fluoroscopic observation, and the fluids withdrawn by siphonage. Through examination of material obtained in this way, McClure and his collaborators¹ at the Evans Memorial, Boston, have found abnormalities in enzyme concentration only in the presence of some lesion involving the pancreas, either primarily or secondarily. Hence, it is concluded that such analyses of duodenal contents furnish an index to the activity of the external secretory function of the pancreas. Measured by estimates of enzyme concentrations of such contents, this secretory activity was found to be much depressed below normal in chronic pancreatitis. Acute pancreatic necrosis, cancer of the head of the pancreas, and lesions obstructing the pancreatic duct were accompanied by marked abnormalities in the enzyme concentration of duodenal contents. Obstructive lesions caused great diminution, while acute necrosis often caused dissociation of the concentration of the enzymes. Estimations of the sort referred to appear to be of aid in obstructive jaundice, in localizing the site of the lesion, and in the differential diagnosis between its benign or malignant character.

McClure has observed a time coincidence of the onset of the flow of bile and of pancreatic juice. This suggests a common stimulant process. His findings in normal persons indicate that the essential factors in eliciting the secretion are the products of digestion. In the Boston tests, evidence of pancreatic stimulation was much less pronounced after the drinking of water than after the ingestion of foodstuffs. This finding occurred in spite of the fact that water stimulates the secretion of acid gastric juice, so that, after its ingestion, acid fluid was ejected from the stomach into the duodenum is necessary materially to stimulate pancreas more than the mere ejection of acid contents into the duodenum is necessary to stimulate materially pancreatic secretion. It was demonstrated also that a relation existed between the degrees of enzymic concentration and the kind of foodstuff ingested, while, on the other hand, no relation was found between the magnitude of enzymic concentration and the degree of acidity of the duodenal contents. The findings, therefore, present evidence that the acidity of the duodenal contents is not the essential factor causing the stimulation of pancreatic juice in man.

It will be noted that such a conclusion appears to speak against the "secretin" theory of pancreatic stimulation formulated by Bayliss and Starling, and now commonly taught as a fundamental feature of alimentary physiology. According to this theory, acid reaching the duodenum promotes the formation of secretin from the walls of the intestine, the secretory hormone thereupon being carried in the blood stream to the liver and pancreas, which are incited to activity. Perhaps current views require some modification, if the experience of McClure and his associates secures further substantiation, at any rate, they already feel justified in asserting that the work supporting the "secretin" theory furnishes only indirect evidence of the correctness of that theory, while phenomena urged in its support can all be explained in other ways.

CIRCULATORY AND RESPIRATORY ADJUSTMENTS TO HEMORRHAGE

Physicians do not need to be reminded of the pre-eminent importance of oxygen for the maintenance of the bodily functions. Recent developments in the arts and practices of man have served to emphasize the life-sustaining role of the element in the eyes of the layman as well as the trained biologist. The aeroplane, which has become capable of ascents to a height of more than seven miles into the atmosphere, where the partial pressure of oxygen is greatly reduced, brings the aviator face to face with the problem of anoxemia. The mountaineer who attempts to scale the heights of a Mount Everest is also reminded that the barometric changes involved in ascension leave him to cope with a relative shortage of oxygen. When the contacts with the rarefied air are made slowly, compensatory adjustments become possible and an acclimatization may occur, so that life still remains possible without the aid of artificial respiratory devices at heights above 20,000 feet for some persons. In most persons subjected to rapid changes of altitude or its respiratory equivalent, however, Schneider¹ has observed that a crisis occurs when the altitude is about 19,000 feet above sea level, which is an equivalent of an atmosphere containing only 10 to 16 per cent of oxygen. A large number of persons show appreciable effects at 14,000 feet, or 12 to 28 per cent of oxygen—as one might find conditions in Pike's Peak. Before such a degree of deficiency is reached, the tendency to anoxemia may be compensated by an increased respiratory volume, a faster pulse, a rise in both the systolic and the pulse pressure, and a moderate fall in diastolic pressure.

Anoxemia is likely to occur under conditions in which the oxygen carrier, hemoglobin, rather than the oxygen itself is decreased in amount. This may happen in hemorrhage. The loss of blood, however, not only

¹ McClure, C. W. and collaborators. Studies in Pancreatic Function. The Enzymic Concentrations of Duodenal Contents in Health and Disease. *Am. J. M. Sc.* 167: 649 (May) 1924.

¹ Schneider, E. C. *Physiol. Rev.* 1: 631 (Oct.) 1921.

initiates a reduction in its oxygen-carrying capacity but also involves the loss of a certain amount of nutrient plasma, so that volume changes are induced. It is conceivable, therefore, that such a depletion would be far more serious for the body than uncomplicated reduction of the external oxygen pressure. In a study of the oxygen consumption during hemorrhage, it was observed² that there is no marked decrease until bleedings of about 15 to 25 per cent of the body weight have occurred. The circulatory respiratory crisis does not arise until approximately one fifth of the total blood volume has been removed. Thus, even when the important requisite hemoglobin to maintain compensation is lacking, physiologic adaptations ensue after considerable hemorrhages before there is a crisis in the mechanism. As happens in an attenuated atmosphere, the danger of anoxemia is averted by an altered rate of blood flow and by increased ventilation of the lungs. Increased pulse rate and increased respiratory depth are characteristic responses to "anemic anoxemia" as well as to other forms of partial oxygen deprivation.

BLACKWATER FEVER AND MALARIA

With the growing invasion of the tropics and the subtropics by the white man, attention has become increasingly directed to many diseases that are characteristic of these regions. This is true, for example, of blackwater, or hemoglobinuric, fever, a malady that has for its prominent symptom the passing of blood pigment into the urine. Some writers regard it merely as a manifestation of certain severe types of malaria, which accounts for the use of the designation "malignant malarial hemoglobinuria" in parts of the South for what is evidently blackwater fever in Africa. It is not surprising, however, that this disorder should be regarded by certain investigators as one that is specific and independent of malaria. Thompson³ has reminded us that although the latter, in its different clinical forms, was known and described by Hippocrates, no recognizable description of hemoglobinuric fever has been found to exist prior to the middle of the nineteenth century.

It becomes necessary from time to time, therefore, to consider anew the assertions of those who insist that blackwater fever is a disease of recent origin and a condition that is *suu generis*. It has been argued, for example, that the seasonal incidence of malaria and blackwater fever differs, and that hence they cannot logically be regarded as interrelated disorders. Only a large number of carefully compiled statistics will warrant compelling deductions of this sort, and most of these have favored the interpretation that the two diseases have approximately the same period of greatest intensity.

This was true for the Panama Canal Zone in the days when the Isthmian Canal Commission was active, and Thompson has recently discovered the relationship between malaria and blackwater fever as regards seasons to be very definite in southern Rhodesia, where he has had large opportunities to study the situation.

It has been argued, in favor of a duality of the diseases, that the malarial parasites are not always found in cases of blackwater fever. The failure to discover these etiologic agents in a blood film taken from a patient exhibiting the clinical symptoms of malaria does not mean, however, that he is free from the parasites. Various investigators have called attention to the absence of parasites from the peripheral blood in cases afterward definitely proved to be malaria. Thompson has found this to be particularly the case in Rhodesia in infections of the malignant tertian type. In fact, he believes that the species of parasite most concerned with blackwater fever is the malignant tertian, and that in those cases in which benign tertian and quartan parasites have been found, they acted only as the excitant of the attack without being the primary causal factor in the production of the hemoglobinuric fever condition. In Africa, the geographic distribution of blackwater fever is certainly associated, if we may trust Thompson's statistics, with those areas where tropical malaria, i. e., *Plasmodium falciparum*, predominates, and where the endemic index is high.

None of the attempts to discover a specific causal organism, other than the malaria parasite, for blackwater fever have succeeded in establishing the claims for any length of time. The hypothesis of a spirochetal etiology that had certain symptoms like jaundice to commend it has failed to meet critical tests, although Thompson ventures to suggest the possibility that syphilis, relapsing fever or acute infective jaundice might, in the presence of malaria, act as an exciting cause of blackwater fever. There is no autolysis detectable comparable to that occurring in protozoal hemoglobinuria. All these conclusions have a direct bearing on the problem of treatment. They speak with renewed emphasis for the preeminent importance of antimalarial measures. Nonimmune persons must be taught to respect these. The menace of malaria should be kept before those liable to an attack, and the proper use of quinin should not be neglected. The recent studies in Rhodesia confirm the belief that malignant tertian malaria is most amenable to this drug, and regular administration of it in proper doses results in rapid improvement in the patients. Thompson believes the great error to lie in the fact that patients often stop using quinin on cessation of the acute symptoms, and in most cases after the cessation of treatment they are readily reinfected. It has been abundantly proved that antimalarial measures reduce blackwater fever. No debate of etiologic theories should divert attention from this helpful information at the present time.

² Schlomovitz, B. H., Ronzone, E., and Schlomovitz, H. H. Oxygen Consumption During Repeated Slight Hemorrhages. *Am. J. Physiol.* 69: 465 (Aug.) 1922.

³ Thompson, J. G. Researches on Blackwater Fever in Southern Rhodesia During the Years 1922 and 1923. *Proc. Roy. Soc. Med. (Sec. Trop. Dis. and Parasitol.)* 17: 47 (May) 1924.

Current Comment

THE SHEPPARD-TOWNER ACT

The publicity department for the Children's Bureau of the United States Department of Labor announces that \$1,688,047 12 has been expended by federal and state governments in the carrying out of the Sheppard-Towner Act, or the so-called federal Maternity and Infancy Act, during the first fifteen months following its passage. The federal grants to the states have totaled \$1,046,523 56, and the state appropriations \$641,523 56. Forty-three states cooperated in 1922 and forty-one states in 1923. The number for 1924 includes forty. The states that do not cooperate are Kansas, Illinois, Louisiana, Vermont, Maine, Massachusetts, Connecticut and Rhode Island, but Louisiana is to come in during 1925. Since this bill was strongly opposed by the medical profession before it was passed by Congress and endorsed by President Harding, it is in order to inquire as to just what has been accomplished through the expenditure of this large amount of money. Perhaps it is well to quote exactly what the publicity department for the bureau has to say, the claim is made that this act has demonstrated its value since it has

- 1 Stimulated state activities in maternal and infant hygiene
- 2 Maintained the principle of local initiative and responsibility

- 3 Improved the quality of the work being done for mothers and babies by disseminating through a central source—the federal government—the results of scientific research and methods of work which have been found to operate successfully

- 4 Increased state appropriations with the passage of the act. From the appropriation for the fiscal year 1922, fifteen states were able to accept only the \$5 000 unmatched funds. Six states were able to accept only the \$5 000 unmatched from the federal appropriation for the fiscal year 1923. All of the states cooperating under the act either have already accepted more than the \$5 000 unmatched allotment from the 1924 federal appropriation, or will be able to do so. Moreover, since the Maternity and Infancy Act became effective, thirty-three states accepting it have made definite increases in their own appropriations for the welfare of mothers and babies.

Actually, the first three items just quoted mean nothing. They represent no scientific evaluation of results, but merely the general statement that more attention is being paid to the matter without evidence of paternalism. How is it demonstrated that this act, which is essentially paternalistic, has "maintained the principle of local initiative and responsibility"? The fourth claim made means even less from the standpoint of benefit, since one of the chief charges against this act was that it forced the states to appropriate money in order that they might receive an equal share of federal funds. It is strange, then, that the claim should be made that one of the benefits of the act has been that the states have been forced to appropriate money which, by the very nature of things, they could hardly avoid appropriating. If the proponents of the Sheppard-Towner Act would justify the bill, they must submit exact figures indicating that the maternal and infant death rates have been appreciably lowered in those states which have cooperated with the federal government, and that the

rates are much lower than those obtaining before this meddlesome legislation became effective, and lower also than those of the states which have not cooperated, and which may serve in this case as a control. Furthermore, recognition should be made of the tendency toward lowering of maternal and infant mortality rates in accordance with the general lowering of all mortality rates following increased application of our knowledge of sanitation and hygiene.

THE HYDROGEN ION CONCENTRATION IN THE DUODENUM

It is not long since the custom prevailed of referring to the reaction of the tissues and body fluids in general terms. Thus, one was taught that the gastric juice is strongly acid whereas the intestinal juices are distinctly alkaline. Gastric contents have been removed for chemical examination with great frequency since the introduction of the stomach tube. The reaction of the intestinal contents was for a long time merely inferred from the known reactions of the pancreatic, biliary and enteric secretions that pour into the lumen of the alimentary canal. Obviously, the admixture of acid gastric chyme as it is discharged into the duodenum through the pylorus is likely to modify the reaction of the intestinal contents, and when the duodenal tube came into vogue, the examinations of the aspirated contents indicated that widespread variations may occur. McClure, Wetmore and Reynolds¹ of Boston, for example, determined the reaction of the duodenal contents removed from normal men after the ingestion of meals consisting of practically pure fat, carbohydrate or protein, or mixtures of these. As the result of their observations, they state that the contents were acid after the ingestion of protein and mixtures of food substances, and alkaline after an intake of fat and carbohydrate foods. The actual figures varied from p_H 3.17 to p_H 8.10, the reaction of water being approximately p_H 7.0. As the progress of biochemistry has demonstrated that small differences in hydrogen ion concentration may be responsible for pronounced differences in the character of chemical or biologic reactions in the body, the importance of the subject will become at once apparent. Lately we have heard much about the effect of small changes in reaction on the growth or inhibition of acidophilic or of proteolytic bacteria in the bowel. The various digestive enzymes are notably sensitive to small variations in hydrogen ion concentration, which have been the subject of considerable controversy regarding the persistence of salivary and gastric enzymatic activities in different regions of the intestine. Unusual interest is therefore attached to the direct electrometric determinations of the hydrogen ion concentrations made in the human duodenum by insertion of an electrode through a fistulous opening. In this way, Hume, Denis, Silverman and Irwin² of New Orleans observed a maximum value of p_H 8.23 and a minimum of p_H 5.90. No definite differences in reaction were

1. McClure C. W., Wetmore A. S. and Reynolds L. New Methods for Estimating Activities of Duodenal Contents of Normal Man, *Arch. Int. Med.* 27: 706 (June) 1921.

2. Hume H. V., Denis W., Silverman, D. N. and Irwin E. L. Hydrogen Ion Concentration in the Human Duodenum. *J. Biol. Chem.* 60: 633 (July) 1924.

observed to be dependent on the type of meals ingested. These figures, obtained without a duodenal sound, represent lower acidity values than have been reported by others. They suggest to the New Orleans investigators that the presence of a tube in the pylorus may cause the sphincter to remain open longer than when no foreign body is present, thereby allowing larger portions of gastric contents to enter the duodenum than are usually passed under more natural conditions, and thus producing greater fluctuations in reaction in the duodenum than the direct observations have now revealed. It is significant that the average of these records was p_H 7.02, essentially a neutral reaction.

COOPERATIVE PLAN IN MEDICAL EDUCATION

The College of Medical Evangelists, of Loma Linda, Calif., is introducing a plan of cooperative work in the teaching of medicine similar to that which has been carried out in the College of Engineering of the University of Cincinnati. The freshman class for the forthcoming session will be divided into two sections, while one section is engaged in classroom work the other will be engaged in practical work in certain hospitals, laboratories and dispensaries, including work in hydrotherapy, massage and other such tasks for which their knowledge of medicine qualifies them. During the following month the two sections will alternate, the first doing the practical work while the second will carry the regular classroom work. It is planned that eventually this arrangement can be carried throughout a five year course. The plan has been adopted, first, because the results of the present day medical curriculum are not as satisfactory as desired and, secondly, to make it possible for a student to support himself to a greater extent while engaged in the study of medicine. The experiment will be watched with interest, since it gives promise of restoring to medical students to some extent the benefits derived from the preceptor system of earlier days. The plan is an experiment in medical education, the results of which may help to solve some of the problems connected with it.

NATURE OF THE BLOOD SUGAR

Organic chemists have in recent years considerably enlarged our knowledge concerning the chemical structure of carbohydrates and the configuration of their molecules. The stereo-isomeric manifestations of the more familiar sugars have, of course, long been recognized, indeed, so far as they involve the optical properties of sugar solutions, they are taken into account whenever the physician uses a polariscope for diagnostic purposes. Other equally subtle structural features of the sugars have only lately been appreciated. For example, there is evidence that glucose can exist in a relatively stable form—the α - β -glucose—and also as a highly reactive isomer— γ -glucose. The attempts to explain the functions of insulin in the metabolism of the carbohydrates have been directed at many biochemical reactions that may proceed in the organism. Several of the hypotheses have already been tested in experimental ways and found wanting. Winter and

Smith¹ of Cambridge, England, have advanced the interesting suggestion that the sugar in normal blood is present in the unstable form of γ -glucose—hence, its ready susceptibility to metabolic transformations. In severe diabetes they conceive the blood sugar to exist as the more stable α - β -glucose. The cause of diabetes is thus sought in the absence or inactivation of an enzyme having the function of transforming the stable form of glucose to the more reactive type. As might be expected, biochemists have not delayed in testing a theory having such interesting metabolic implications. Without reviewing the experimental evidence in detail, it may suffice here to note that the major thesis of Winter and Smith has failed of satisfactory corroboration. According to Denis and Hume² of New Orleans, for example, proof of the existence of γ -glucose in normal blood is lacking. Unless it can be supplied in the face of indications to the contrary, it will be more profitable to turn to other possibilities in explanation of the way in which insulin facilitates the utilization of glucose in the body.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SEND-
ING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GEN-
ERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES,
NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Milk Control in Birmingham—As a result of a four-year campaign to improve the milk supply, 75 per cent of the milk used in Birmingham is pasteurized. Prior to 1919, the milk averaged a bacterial content of almost 1 million bacteria per cubic centimeter, and according to the chief of the food and dairy division of the health department half of it was adulterated the citizens paying \$94,000 a year for the water thus used. A milk code, adopted in November, 1919 was to have become effective April, 1920, but an injunction procedure prevented its enforcement for more than a year. An agreement was reached in July, 1921 by the department of health to reinstate milk control on the basis of the original ordinance modified so that instead of adopting the bacterial content of 60,000 per cubic centimeter, to be enforced at once, a sliding scale was arranged gradually reducing the bacterial limit from 500,000 per cubic centimeter to a final standard of 50,000 bacteria per cubic centimeter over a period of twelve months. Since October 31, 1922, the bacterial content of special raw milk and special pasteurized milk has been fixed at 30,000 bacteria per cubic centimeter and at a final bacterial limit of 20,000 per cubic centimeter after December 31, 1924. Since the development of milk control in Birmingham the typhoid death rate has dropped from 655 per hundred thousand in 1917 to 77 in 1922, and the death rate from colitis among babies under 2 years of age from 185.5 per hundred thousand to 51.6 in 1922. Investigation in the last three months disclosed twenty-six persons employed at dairies who were carriers of typhoid bacilli. There were up to August 1, this year, forty-three cases of typhoid fever reported. Six cases were traced to a single raw milk dairy where two typhoid carriers were found. Almost four times as many people in the city use pasteurized milk as those who use raw milk, yet of thirty-eight consumers of milk who contracted typhoid fever this year, about two thirds of them used raw milk.

ARIZONA

Personal—Dr. John T. McDonald, Los Angeles, has been appointed subdistrict medical officer in the Veterans' Bureau station at Phoenix.

¹ Winter, L. B., and Smith, W. J. *Physiol.* 57: 100 (Dec.) 1922.
Forrest, W. D., Smith, W. and Winter, L. B. *Ibid.* 57: 224 (March) 1923.

² Denis, W. and Hume, H. V. On the Nature of Blood Sugar, *J. Biol. Chem.* 60: 603 (July) 1924.

State Board Pamphlets—The *Bulletin* of the Arizona State Board of Health, July, contains the names of pamphlets on public health and related subjects issued, without charge, by the state board of health. The demand for these pamphlets indicates a constantly increasing interest in health matters. There were distributed, in January, 1,406 of these pamphlets in March 12,904, in April, 53,060, the total for the first six months of 1924 was 82,933 which was more than the number for the entire previous year.

CALIFORNIA

College Moves—The College of the Pacific at San Jose is moving to Stockton where seven new buildings are being completed at a cost of \$750,000.

Laboratory Bulletin—The director of the State Hygienic Laboratory, Dr. Wilfred H. Kellogg, has started the publication of a bulletin for laboratory workers in the state. The bulletin has been planned as a medium for the distribution of information of interest to California laboratories, private, hospital and municipal, and to serve as a connecting link between them. The Hygienic Laboratory desires to assist in the solution of problems of other laboratories and as an example will titrate such agents as amboceptor, antigen and agglutinating sera.

"Beauty Doctor" Arrested—The state board of medical examiners caused the arrest, August 20, of Margaret Crosse, of the Crosse Laboratories, a beauty parlor at 683 Sutter Street, on a charge of practicing medicine without a license, it is reported. Surgical instruments and pamphlets describing skin treatments to the "crowned heads of Europe" were seized, but the defendant claimed that the instruments were never used by her and that the pamphlets referred to lotions she distributed. Miss Crosse, however, agreed it is reported, to rejuvenate the face of a policewoman for \$150, or to do it surgically for a larger sum.

Chiropractor and Others in Court—It is reported that the bond of chiropractor Raymond Loyd, San Bernardino was raised from \$1,000 to \$5,000 at a preliminary hearing, August 15 on a charge of extortion. The secretary of the state board of medical examiners announced, August 11, the arrest of Christopher Liscum in Castroville on a charge of practicing medicine without a license. R. Thompson Fowler, Oakland who claimed to have a secret formula "for the cure of tuberculosis," was arrested, August 1, on a charge of practicing medicine without a license. The patient, a woman, aged 19, it is said, had Fowler arrested on the claim that his formula "almost cost her life" instead of improving her illness.

Medical Society Milk Commission—The San Francisco County Medical Society's milk commission, active since 1907, has been a factor in the extensive growth in the use of certified milk in stores and refreshment places where children are served. Eight hospitals in San Francisco, one cafeteria, and the Stanford Convalescent Home at Palo Alto provide certified milk for children in their institutions. The milk commission of the medical society guarantees to the physicians of San Francisco and environs reaching from Sacramento to San Jose, a supply of milk of the highest grade. The commission requires a bacterial content in raw milk below 10,000 per cubic centimeter, that no cows be bought for the certified herds except under the tuberculin test, and that the whole group from which the cows came must be tested and show not more than 10 per cent reactors. The whole herd is tuberculin tested semiannually and reactors excluded at once. The price of certified milk is 25 cents a quart.

COLORADO

Personal—Dr. Nicholas M. Alter, instructor in internal medicine at the University of Michigan Medical School, Ann Arbor, has been appointed professor of pathology at the University of Colorado School of Medicine, Denver.

State Medical Meeting—The fifty-fourth annual session of the Colorado State Medical Society will be held in Denver, October 7-9. The first meeting of the house of delegates, Monday evening October 6 will be in the assembly room of the Medical Society of the City and County of Denver. Members on the scientific program from this state have been requested to limit their papers to ten-minute abstracts which can be elaborated for publication. Among those from other states on the program are Drs. Elliott P. Joslin, Boston, Carl A. Hedblom, Rochester, Minn., William H. Thearle, M. C., U. S. Army, Lawrason Brown, Saranac Lake, N. Y., and Edwin R. LeCount, Chicago.

ILLINOIS

"Medical Showman" Arrested—W. L. Ivey, who recently conducted "medicine shows" at Windsor, Strasburg, Sigel and Shelbyville, was arrested at Beecher City, August 20, on a charge of practicing medicine without a license, it is reported. Ivey claimed to be from Roth, Okla., and was released under \$1,000 bond.

Clinics for Crippled Children—Since January, 1921, the state department of health has conducted more than 350 clinics for crippled children at forty-two points throughout the state. A total of 8,228 patients attended the clinics and medical service was given all who were unable to obtain it from private sources. Only 10 per cent of the children seen were placed in institutions.

"Nature Doctor" Signs Death Certificate—It is reported that Andrew Curtis Westervelt, who represented himself as a physician, was arrested August 23. Curtis signed the death certificate of one of his "patients," erasing the M.D. on the form and substituting after his signature, "N. D." It was found, after an investigation by the coroner, that the patient died of an entirely different disease than that described by Curtis.

CHICAGO

Medical Post—The Chicago Medical Post No. 216 of the American Legion will assemble on National Defense Day, September 12 with the medical regiment at 7 p. m. in front of the Newberry Library, North Dearborn and Delaware streets.

Society News—A special meeting of the Chicago Roentgen Society will be held, September 11, at the Cook County Hospital. Dr. Joseph Aspray, Spokane, Wash., will speak on "A Superior Routine Technique in the Roentgenologic Examination of the Nasal Accessory Sinuses."

Personal—Dr. Jeremiah H. Walsh, secretary of the Board of Trustees of the American Medical Association gave an address on the pioneer medical men of Illinois at the annual summer outing of the Jo Davis County Medical Society at Camp Nineteen on the Mississippi River, August 26.

INDIANA

Personal—Edward Rowlands, Evansville, executive secretary of Evansville College has been appointed assistant registrar at the Indiana University School of Medicine, Indianapolis.—Dr. Thurman B. Rice has been appointed director of the laboratory of bacteriology and hygiene of the state board of health, to succeed Dr. Alfred G. Long resigned. Dr. Rice has been a member of the faculty of Indiana University School of Medicine for seven years.

IOWA

Personal—Dr. Felix J. Scheffler, Onawa, has signed a contract to become county physician for the west half of Monona County. Dr. Adolph J. Lieber, Des Moines succeeded Dr. Phil Watters as police surgeon September 1.—Drs. P. G. Pomeroy and W. D. Hall have purchased the Mineral Springs Hospital, Marengo, of Drs. William P. Hutchins and F. F. Winsell.

KENTUCKY

Physician Arrested—Dr. Grover S. Brzozowski, Louisville, was arrested, August 24 on a charge of operating his automobile while under the influence of liquor and is being held for the alleged extortion of money from motorists on a charge of impersonating an officer and highway robbery, it is reported. Complaints filed alleged that Brzozowski stopped motorists on the pretext of violating a traffic law and took \$10 and \$17, respectively, from them for their release.

LOUISIANA

Instruction in Care of Babies—The board of health of New Orleans opened an infant care and feeding clinic August 15, in the municipal building. The clinic, which is in charge of the child welfare division, of which Dr. John Signorelli is the head, will be primarily educational.

Chair of Tropical Medicine—The Tulane University of Louisiana School of Medicine, New Orleans, has announced plans for the establishment of a chair of tropical medicine. A bequest of \$60,000 by William E. Vincent makes it possible to launch this project, and with this benefaction in hand it is estimated that an additional \$70,000 will make possible the creation of a department of tropical medicine.

MASSACHUSETTS

Personal—Dr Ranson H Sartwell has resigned as assistant superintendent of the Worcester State Hospital to become superintendent of the Rhode Island Infirmary at Cranston, R I

Hospital News—A clinic for the treatment of venereal and skin diseases has been started at the Cambridge City Hospital. Dr Walter T Garfield is in charge.—The Hampden County Tuberculosis and Public Health Association's Preventorium at Provin Mountain was formally dedicated, August 22. Dr Parker N Court, president of the tuberculosis association, presided, and John C Robinson, donor of the land, presented the deed. The principal speaker was Dr Eugene Kelly, state commissioner of public health. The preventorium, which is filled to capacity, has accommodations for 104 children.

MICHIGAN

Smallpox in Five Years—The U S Public Health Service reports that Michigan has had 15,384 cases of smallpox in the last five years. In the same period the state of Massachusetts, with approximately the same population, has had 114 cases of smallpox.

Infantile Paralysis Holds Up Detroit Schools—The superintendent of schools of Detroit announced, August 28, that due to the prevalence of infantile paralysis in the city the opening of the public schools would be delayed until September 15. This action was taken, it is reported, at the request of the health commissioner, who reported there were sixty-four cases of infantile paralysis in the city.

MINNESOTA

Personal—Dr Edward W Fahey, St Paul, was elected supreme physician of the Knights of Columbus at the forty-seventh convention recently, in New York City.—Dr Milton J Geyman, formerly of Browerville, will take up a fellowship in roentgenology at the University of Minnesota, this fall.—Dr Edward C Gager left for Montreal, August 15, en route to Europe, to be gone for a year.

MISSISSIPPI

Prevalence of Malaria—Dr Richard N Whitfield, Florence, of the state department of health, reports that there were 11,938 cases of malaria reported in the state during July. Malaria was by far the most prevalent disease reported, the next being bacillary dysentery with 2,299 cases, the next gonorrhea with 1,115 cases reported. There were eleven cases of anthrax in man reported in July.

MISSOURI

Trachoma Clinics—The state board of health has arranged for a trachoma clinic, to be held at Columbia, September 24-25, by Dr R L Russell, director of the Division for the Prevention of Blindness in cooperation with a representative of the U S Public Health Service. The private railroad car is equipped with facilities for treating trachoma and will be routed to fifteen communities in the state during September and October. Dr Russell states, it is reported, that clinics have been held in more than fifty counties in the state and that trachoma prevailed to some degree in all of them.

Osteopaths Sue Osteopathic Board—It is reported that Dr A L McKenzie and the Central College of Osteopaths, Kansas City, have filed a suit in the circuit court against the osteopathic board for \$150,000 damages. The petition alleges that the osteopathic board and its members have conspired to discriminate against the McKenzie school, which it branded as not reputable. "Dr" McKenzie is also president of the Kansas City University of Physicians and Surgeons. He recently lost a suit against the state board of health (THE JOURNAL, September 6, p 774) in which the court was petitioned to compel the board to accept graduates of the Kansas City University of Physicians and Surgeons as applicants for licenses to practice medicine.

MONTANA

Personal—Dr Frances Sage Bradley has been appointed director of the child welfare division of the state board of health during the absence of Dr Hazel D Bonness.

NEW JERSEY

Quack Treats Hotel Guests—Jacques Gordon was arrested at Atlantic City, August 28, on a charge of practicing medicine without a license, it is reported. Gordon had written prescriptions for guests at a prominent hotel where he was stopping. The Atlantic County Medical Society investigated this case.

Nonfatal Epidemics—According to the *Bulletin* of the department of health of Newark, there were 2,118 cases of German measles in the first six months of 1924 and only 170 cases in the first six months of 1923, also 2,103 cases of mumps as compared with 419 cases in 1923, and 1,180 cases of chickenpox the first six months of 1924, a total of 5,407 cases of acute illness, not one of which was fatal.

NEW MEXICO

Personal—Dr Benjamin J Patterson, Las Vegas, has been appointed part time health officer of San Miguel County to succeed Dr Michael D Moran, resigned. The appointment is effective until the first of next year when the matter of returning to a full time basis will be decided.

NEW YORK

State Hospital Opens—A new state hospital for mental diseases to be known as the Harlem Valley Hospital, was recently opened at Wingate with thirty-two patients from Long Island institutions. This is the first unit completed in the \$50,000,000 program approved at the last election. Dr John R Ross, formerly of the Danmemora State Hospital, is superintendent.

Puerperal Sepsis—The Division of Maternity, Infancy and Child Hygiene of the New York State Department of Health requests the cooperation of physicians in reporting cases of puerperal sepsis. The sanitary code authorizes such reports but there has been laxity in complying with the requirement. From 1920 to 1923 1,148 deaths were reported as due to puerperal sepsis while only 877 of these cases had been reported before the patients died.

Infantile Paralysis in August—The total number of cases for the month of August was 200 and the total since June 1 386. These are the highest figures since 1916 when the corresponding figures were 1,846 and 2,489, respectively. For the week ending August 30 there was an increase of 11 cases over the preceding week. The following places have reported 10 or more cases since June 1: Syracuse 99, Oneida 20, Oswego 19, Buffalo 12, Fulton 10, and the town of New Haven, Oswego County, 10.

Typhoid at Port Jefferson Controlled—The typhoid fever epidemic at Port Jefferson, which has thus far cost three lives, is under control. It has shown, among other things, a need for more extensive health inspection among the neighboring villages and the Brookhaven town board has appointed a committee to investigate the cost and advisability of adopting a model health code in the township. A code prepared by the state department of health was presented to the board for consideration by Dr Richard Slee, Rockville Center, a state health officer.

New York City

Personal—Dr Robert J Wilson, director of the bureau of hospitals, department of health New York City, was presented with an illuminated, autographed token of esteem by the employees of that bureau and the bureau of laboratories, on his recent retirement as director following twenty-eight years of service.—Dr J H L Cumpston, director-general of health of Australia, who is in this country as a guest of the International Health Board of the Rockefeller Foundation, visited the state department of health at Albany, August 23.

New Hospital for Joint Diseases—The new hospital will open, October 5 with a capacity of 275 beds, and facilities for treating 1,500 patients a day. The original Hospital for Joint Diseases was established in 1906 with seven beds. The hospital is supported by the Federation for the Support of Jewish Charities and to make it as nearly self-supporting as possible, seventy-five beds will be in private rooms, the remainder will be ward beds. Dr Henry W Frauenthal, the founder, will be physician and surgeon-in-chief. Mr Lewis Strauss, president, and Mr Oliver F Bartine, superintendent.

Ambulance Service—According to a report by the United Hospital Fund, about 42,000 persons have been attended in the last year by ambulances from institutions supported by the fund. A total of more than 125,000 calls were answered.

from all New York hospitals that provide ambulance service. Forty general hospitals maintain 100 public ambulances engaged in city-wide service. The municipal hospitals of Manhattan and the Bronx maintain 38 per cent of the ambulance service and those of Brooklyn 22 per cent. The report states that eight minutes from the time any one in New York City is injured or stricken with illness requiring emergency attention an ambulance is on its way to provide relief.

Children's Welfare Association Seeks Public Support—This organization has launched a movement to enlist interest in behalf of certain items in the budget. It desires to convince the board of estimate that whatever else may be deleted it cannot afford to begin with sums spent for the welfare of children. The federation urges the appointment of twenty additional school nurses and twenty medical inspectors giving three hours a day, pointing to the present inadequacy. In Queens, for example, school nurses are responsible for 8,576 pupils per nurse. There is also a request for five additional medical inspectors to serve three hours a day in baby health stations now covered by school medical inspectors, and a plea for funds to extend prenatal work. The salaries involved in the enlargement outlined amount to \$93,700.

Dispensary Control of Tuberculosis—Under this title the Association of Tuberculosis Clinics of Greater New York has issued its yearbook which shows a total of thirty-one tuberculosis clinics in Greater New York. The number of clinics was not reduced in the last year but the number of sessions in the department of health clinics was reduced from one every day with a night session on Saturday, to a session every other day with a night session and a children's session on Saturday making in all five a week. The Corlears Clinic, which formerly operated at 303 Broome Street, was moved, July 1 to the headquarters of the department of health, 505 Pearl Street. Stuyvesant Clinic, which for three years was at 540 East Thirteenth Street, doubled up with the Yorkville Clinic. Another loss to the upper east side of Manhattan was the closing of the Day Camp, operated by the department of health at the foot of East Ninety-First Street.

NORTH CAROLINA

Impostor Sentenced—It is reported, that a "Dr." C Carwell, Jr., pleaded guilty in the superior court at Gaston to forging the endorsement of Dr. O. L. Miller on a bank draft for \$150 and was sentenced to not less than four or more than six years in the state prison. In passing sentence, the court informally expressed the opinion that Carwell was an impostor. A negress testified that she paid him \$9 a short time ago on a promise to cure her daughter of typhoid fever, and that Carwell claimed to be a doctor 'sent out by Uncle Sam'.

OHIO

Hospital News—Structural work has begun on the new U. S. Marine Hospital at Cleveland which will cost about \$1,500,000.

Society Honors Veteran Physician—The Champaign County Medical Society held its annual picnic, August 27, at Ohio Caverns, in honor of Dr. Halbert B. Hunt, St. Paris, who is celebrating his fiftieth year as a practicing physician.

Thyroid Survey of School Children—The U. S. Public Health Service, the commissioner of health and his associates made a thyroid survey of school children in Cincinnati. The results reported by Olesen (Public Health Reports July 25), show in six-one elementary public and forty-three elementary parochial schools between the first and eighth grades, the kindergarten being excluded, 47,493 children were examined and 15,751, or 32.2 per cent, of the children had thyroid enlargements. Among 23,710 boys 6,314, or 26.6 per cent, had some degree of enlargement. Among 23,783 girls 9,437, or 39.8 per cent, had enlargements. Among 2,396 colored boys, 675, or 28.2 per cent, and among 2,671 colored girls, 1,245, or 45.1 per cent, had some degree of enlargement. The greatest prevalence occurred between the ages of 11 and 13 years in both sexes. In 142 instances representing 0.9 per cent of the enlargements a presumptive diagnosis of adenoma was recorded. These nodular enlargements were distributed to the extent of 45.4 per cent among boys and 55.6 per cent among girls. Only one frank case of exophthalmic goiter was noted and this in a girl, aged 13 who was under medical supervision. Tentative diagnoses of exophthalmic goiter were made in three other girls. It was recommended to the board of health of Cincinnati that the ingestion of a definite and constant supply of iodine by each person be insured, administered through the medium of table

salt, also that the board of health favor the enactment of a federal statute requiring the iodization of all table salt in the United States, to insure uniformity of the product and restore to common salt an ingredient, which when naturally present, is invariably removed in refining. The proportion of one part of an iodine compound, such as sodium iodide to 5,000 parts of salt apparently satisfies the requirements. The proposition was submitted to the Cincinnati Academy of Medicine with the request that, after assuring itself of the merits of iodized salt, it recommend the use of this product.

PENNSYLVANIA

The Oldest School of Medicine—The one hundred and fifty-ninth annual session of the University of Pennsylvania School of Medicine, Philadelphia, opens September 26. This the oldest medical school in the United States was founded by Dr. John Morgan, who held the first medical professorship created in the colonies. The total number of graduates from the University of Pennsylvania School of Medicine has been 14,911.

Hospital News—The cost of food at the Hamot Hospital, Erie, in 1923, according to the annual report, was at the rate of 52 cents a day for each person. The average number of patients treated daily was 134, and the daily average of the entire hospital family, 270. Based on the unit cost of a patient a day, the food cost \$1.33. The total cost of caring for a patient a day was \$4.22, or 40 cents more than the average for the previous year. The tuberculosis hospital board of Erie County has selected Wolff farm near Erie, as a site for the new tuberculosis hospital. The site has been approved by the state department of health.

History of a Mental Clinic—In June, 1921, Dr. James Allen Jackson, superintendent of the Danville State Hospital, and Dr. Horace V. Pike, director of clinical psychiatry, read papers on the importance of early recognition of mental disorders before the Lycoming County Medical Society. After the meeting the secretary of the Williamsport Social Service Bureau requested that a number of persons in whom the bureau was interested be examined and Dr. Pike came to Williamsport for two days to conduct the examinations. In return for that assistance, it is reported, the secretary offered the state hospital, the use of her city hall office for interviewing patients on furlough and within six months the work increased so the secretary could not do it justice in connection with the social service bureau. A conference was arranged with prominent members of the community. A committee secured permanent quarters for a mental clinic at the Lycoming County Health Center, and funds for a full-time psychiatric nurse were guaranteed. This enlarged the field of the clinic. Cases were referred by physicians, clergymen, courts, the police, the social service bureau, the Lycoming County Children's Aid Society, Home for the Friendless, Girls Training School, Boys Training School, State Industrial Home at Muncy, and by parents. The clinic is entering now its fourth year in this community with 400 new patients registered. The average number of patients at the semi-monthly sessions of the clinic in the last year has been from twenty to twenty-five. There has been added a field representative of the bureau of mental health of the state department of public welfare and a class for retarded school children established. The growth of the Williamsport Mental Health Clinic has at least been coincident with the decrease of more than 6 per cent in the last three years in the admission rate to the Danville State Hospital. Until three years ago there had never been a year since 1869 when the hospital was founded, for which the number of patients did not exceed the number for the previous year.

Philadelphia

Hospital News—The Memorial Hospital, 5614 Walnut Street erected in memory of William E. Fehrenbach, was dedicated, September 5.

Tuberculosis Society Moves—The Pennsylvania Tuberculosis Society has moved its headquarters from 10 South Eighteenth Street to the new Social Service Building on Juniper Street below Spruce, which building now houses most of the health and welfare organizations of Philadelphia.

Smallpox Quarantine—A case of smallpox in South Philadelphia caused the police to establish a quarantine at midnight from Tenth to Twelfth streets and from Christian to Carpenter streets affecting more than 2,500 persons. The patient was a negro who came here six weeks ago from Raleigh, N. C.

RHODE ISLAND

Society News—The quarterly meeting of the Rhode Island Medical Society held at Newport News, September 4, under the presidency of Dr. William F. Barry, was, in part, an outing with the Newport County Medical Society as host. A tour was conducted, including the Newport Hospital, the Naval Hospital, the Naval Training Station and Fort Adams ending at the beach where dinner was served. The mayor of Newport gave an address.

TEXAS

Approved Tourist Camps—The state board of health has placed its approval on fifty tourist camps in the state, according to the state health officer. To be in this class, the camp must have a safe water supply, a system of sewerage that eliminates danger of contamination of the soil and disease transmission, a method of refuse collection that insures sanitation and a caretaker who enforces sanitary regulations. Following is a list of the approved camps to date:

Waco Mineral Wells Barstow Belton Plainview Houston Stephenville Amarillo Fort Worth Shamrock, Gainesville, Austin (Deep Eddy), Glenrose (City), Donna Glenrose (Wright), Wharton, McKinney Laredo San Antonio San Antonio (San Pedro), Lubbock El Paso (Camp Grande), Brownsville Waco (Cotton Palace), West Marlin La Grange Marble Falls Calvert Lufkin Greenville Henrietta Texarkana Midland Houston (Central), Vernon, Dalhart Beaumont Brady Glenrose (Automobile), Dalhart (City), Texline San Jacinto (State), San Antonio (Brackenridge), San Antonio (Roosevelt), Palo Pinto Tanning State, Austin (Barton Springs), Glenrose (Glenwood).

WEST VIRGINIA

Personal—Dr. Benjamin L. Hume, Huntington, has been appointed coroner for Cabell County to succeed Dr. Earl B. Gerlach.

WISCONSIN

Resolutions Adopted by the State Society—At the seventy-eighth annual meeting of the State Medical Society of Wisconsin, Green Bay, August 20-22, the house of delegates adopted a resolution that there be created a section on radiology. The Milwaukee County Radiological Society was empowered to organize the section. Three resolutions adopted at the last meeting of the American Medical Association in Chicago, which concern (1) the modification of the National Prohibition Act where that act violates the confidential relation that must be maintained between physician and patient, (2) what is ethical and what is unethical in institutional publicity, and (3) the labeling of cosmetics and dyes containing poisonous drugs were also adopted. The committee on resolutions also recommended for adoption (1) That the committee on health and public instruction and that on school hygiene be combined as the committee on health and public instruction, (2) the appropriation of \$575 to the committee on cancer to carry out the work outlined in its report, (3) the appropriation of \$500 to the committee on health and public instruction to carry out its 1925 program, (4) that the future policy of the society shall be to expend its resources solely in promotion of its own activities. All of these resolutions were adopted.

GENERAL

Memorial to Morton—A monument in memory of Dr. William Thomas Green Morton who administered ether for a surgical operation at the Massachusetts General Hospital, Boston, Oct. 16, 1846, was dedicated, September 1, at Charlton, Mass., his birthplace.

Tuberculosis in General Hospitals—The following resolution was adopted at the recent annual meeting of the National Tuberculosis Association at Atlanta:

Resolved, That the National Tuberculosis Association reaffirms its belief in the need of admitting cases of pulmonary tuberculosis to general hospitals in order to permit of a more intensive training of the young medical men of the country in this important field.

Society News—The council of the National Academy of Sciences has accepted the invitation of Harvard University and the American Academy of Arts and Sciences to hold its annual meeting in Cambridge and Boston November 10-12. The arrangements for the meeting will be made by the local committee, the secretary of which is Edwin B. Wilson, Ph.D., of the Harvard School of Public Health, Boston.

Communicable Disease—The *U. S. Public Health Reports* state that 760 cases of typhoid fever from thirty-three states were reported for the week ending August 9, and 831 cases for the corresponding week of 1923. There were reported 316 cases of smallpox for the week and for the corresponding

week last year, 145 cases. Eight hundred and forty-four cases of scarlet fever were reported this year as against 638 cases for the week ended August 9, last year. There were 1,019 cases and 1,066 cases of diphtheria, respectively, for the weeks ending August 9 of 1923 and 1924.

Foreign Medicines in China—The Bureau of Foreign and Domestic Commerce of the U. S. Department of Commerce states that the Chinese Maritime Customs returns show that drugs and medicines imported into Canton amounted to \$507,736 in 1922, and in 1923, \$615,288. The bulk of foreign medicines and drugs used in this district come from England, nearly all being shipped from stocks carried in Hongkong and Shanghai. The prices quoted by British exporters are said to be lower than those at which American goods are available.

Personal—The United States delegation to the Fourth Pan American Congress on Child Welfare, to be held at Santiago Chile, October 12-19, includes, among others, Dr. Ella Oppenheimer of the Children's Bureau of the Department of Labor, Dr. Carlisle P. Knight of the U. S. Public Health Service, Samuel McCune Lindsay, Ph.D., professor of political science at Columbia University, Edwin N. Clopper, Ph.D., assistant secretary of the Cincinnati Council of Social Agents, and Dr. Webster E. Browning, secretary of the committee on cooperation in Latin America.

Campaign to Enlarge American Hospital in Paris—Hon. Myron T. Herrick, U. S. ambassador to France, is head of a committee to obtain funds to complete the memorial building adjoining the American Hospital of Paris. The present hospital of thirty-two beds is inadequate for Americans living abroad, together with tourists and others who go on business. It is planned to increase the capacity to 120 beds, and to complete and equip the buildings \$1,097,000 will be required. About half of this sum has been subscribed. The American Hospital is in Neuilly-sur-Seine and includes an area of about 1,500 square meters.

Food Conservation Conference—The first Pan-Pacific Food Conservation Conference was held in Honolulu July 31-August 14. Of the ninety-five delegates present, thirty-eight were from the United States, fifty-five from other Pacific countries, and two from the West Indies. Fourteen Pacific countries were represented. The conference, held under the auspices of the Pan-Pacific Union, was organized in seven sections. At the final sessions thirty-three resolutions were adopted, three of which referred to the work of the Pan-Pacific Science Congress, which will be held in Japan in the autumn of 1926.

Dedication of Bust of Pasteur—The American Institute of Baking Chicago, will dedicate a portrait bust in bronze of Pasteur at the institute, 1135 Fullerton Avenue, September 16 (The Journal June 14, p. 1978). The bust was presented by Helge Jacobsen, director of Carlsberg Glyptotek, Vagn Jacobsen, director of Carlsberg Brewery, and the Carlsberg Fund, Poul C. Poulsen, director, Copenhagen, Denmark. The French consul at Chicago, Mr. A. Berthelemy, and Dr. S. P. L. Sorensen, director of the Carlsberg Laboratories, Copenhagen, Denmark, will speak, and the presentation will be made on behalf of the donors by Dr. Max Henius, president of the Wahl-Henius Institute.

The International Union Against Tuberculosis—Founded in 1920, this organization has published the first number of its bulletin. Twenty-four countries are now affiliated with the union whose affairs are directed by an executive committee and a council that meets once a year. The first conference was held in Paris in 1920, the second in London, 1921, the third in Brussels, 1922, the fourth at Lausanne, Aug. 5-7, 1924. The union, formed primarily among nations signatory to the covenant of the League of Nations, includes the United States. Its objects are to coordinate the efforts of all organizations engaged in a campaign against tuberculosis and to collect and distribute information on questions concerning this disease. The bulletin will publish papers read at the conferences. It will be issued quarterly in the French and English languages on facing pages.

Scientific American Reports on Abrams Investigation—The committee appointed by the *Scientific American* about a year ago to investigate the so-called electronic reactions of Abrams has rendered a report. The conclusion was, in part, that "The entire Abrams electronic technique is not worthy of serious attention in any of its various forms. At best, it is all an illusion, at worst, it is a colossal fraud. The so-called electronic reactions of Abrams do not exist—at least objectively. They are merely products of the Abrams' practitioners' minds." The committee which conducted the investigation

comprised Dr William H Park, director of the bureau of laboratories of the New York Health Department, Dr Walter C Alvarez, associate professor of research medicine at the George Williams Hooper Foundation of Medical Research, University of California, Robert C Post, a civil engineer, and J Malcolm Bird and Austin C Lescarboursa, editors of the *Scientific American*

The Pan-Pacific Research Institute—The Castle home with 4 acres of land, one of the largest in Honolulu, and another building almost as large is to be the home of the Pan-Pacific Scientific Research Institute. According to *Science*, the buildings will house, besides the permanent staff, about forty visiting research scientists. This gift will be the nucleus of the Pan-Pacific University, a graduate institution for which a charter was granted some years ago. The chief work of the research institute will be along lines of study of food resources of lands in and about the Pacific Ocean. It will not be connected with any other institution but will cooperate with kindred institutions. Scientists who, for months have been planning the Pan-Pacific Research Institute will report at the coming conference and it is understood the institute will begin operations at once. Dr David Starr Jordan, chancellor emeritus of Stanford University, it is reported, has tentatively accepted the directorship of the institute.

Bequests and Donations—The following bequests and donations have been announced recently:

To the Shriners Hospital for Crippled Children St Louis the estate of Col Clarence A Sinclair, the value of which is estimated at more than \$100 000 for the erection and maintenance of a home for convalescent children.

Methodist Episcopal Hospital Brooklyn, \$100 000 from an anonymous donor.

The Wisconsin Deaconess Hospital Green Bay \$50 000, by Dr Julius J Bellin of Green Bay.

The will of Frank P Woodside provides \$50 000 of Baltimore city 4 per cent stock for the Church Home and Infirmary Baltimore as a memorial to his parents and to be used to provide a room for free patients.

The City Hospital Hamburg Iowa \$40 000 and the Hand Hospital Shenandoah Iowa \$5 000 by the will of Mrs Mary Shoults.

The Staten Island Hospital \$25 000 by the will of the late Wm G Wilcox.

To the Sharon Sanatorium Boston, an anonymous gift of \$25 000 recently.

The will of the late Elkan Naumburg among other public bequests contained gifts of \$1 000 each to the Hospital for Ruptured and Crippled the Beth Israel Hospital the Sydenham Hospital and the Hospital for Joint Diseases.

H H Cushman has given a fund carrying \$750 each term for the establishment of a graduate fellowship in chemical research at Western Reserve University Cleveland.

Final Report of Framingham Demonstration—The National Tuberculosis Association has just issued a final report on the seven year tuberculosis and health study in Framingham, Mass. There was a decrease in the tuberculosis death rate in Framingham, as a result of the seven years' work, of 68 per cent, while the reduction was only 32 per cent in neighboring towns just outside the demonstration area. The death rate among infants under 1 year of age was reduced 40 per cent. The conclusion was reached from this study that one person in every hundred has active tuberculosis and another 1 per cent has tuberculosis in an arrested or latent form. That the Framingham demonstration was not an experiment on the city is shown by the fact that almost the entire health program is supported today by public and private funds at a per capita cost of \$2.40. This demonstration was conducted with funds from the Metropolitan Life Insurance Company, but almost any community in the United States can afford to pay the price for a similar or greater reduction of deaths from tuberculosis. As a result of interest which this demonstration aroused, the Milbank Memorial Fund has started a tuberculosis and public health study in Cattaraugus County and Syracuse N Y, and a third in a district having 200,000 people in New York City. The Milbank Memorial Fund expects that these three demonstrations will receive such public attention as will make possible a rapid adoption in this and other countries of sound public health methods. In addition to the New York demonstrations others are being conducted in Mansfield, Ohio, Fargo, N D, Rutherford County Tennessee, Athens Ga, and elsewhere by the American Child Health Association, Commonwealth Fund and other agencies.

Regional Cancer Campaign—The object of the recent campaign of the American Society for the Control of Cancer was to create interest in cancer control so that persons who had cancer in its early stages might suspect their condition and apply to reliable physicians for treatment. With this end in view, early symptoms were described and people informed that their hope of cure lay in immediate and skilful treatment. This was the society's "message." The whole country

was organized into committees and subcommittees. Each state has a permanent chairman and under him are many chairmen, in some states one for each county and for each of the larger communities. The American Society, for the Control of Cancer supplied most of the educational material used in the campaign. Many state chairmen had copies of the film, "The Reward of Courage" and other lantern slides which were shipped from place to place. Circulars and posters for general display purposes, handbooks for physicians, booklets for intelligent readers, lecture outlines for physicians, a formal letter to be read before church congregations and exhibits for medical meetings and health shows were used to deliver the message. Two of the circulars, for example were printed to the extent of 2,700 000 copies each. As an example of how the regional campaign was conducted by local agencies, a note is quoted concerning the District of Columbia.

The work in Washington under the direction of Dr H H Kerr was promoted by a committee of one hundred. The members were leading citizens members of congress and federal departments representing all phases of activity. Newspaper clippings show that there was a large amount of interest and activity. An excellent double-column editorial fifteen inches long appeared in the *Washington Post* April 13. The manager of the National Theater allowed his theater to be opened every day for noontime meetings which were addressed by prominent physicians and laymen. The Society's cancer film was shown daily at these meetings. Radio talks were a part of the week's program and resulted in advertising clinic facilities at which 300 patients were examined. Most of these patients applied at the clinic for women which has been conducted by the Women's Welfare Association since cancer week of 1922.

LATIN AMERICA

Hospital News—The new Santo Tomas Hospital erected by the Republic of Panama in Panama will be formally dedicated, September 19. The presentation of the complete hospital will be made by Major Edgar A Bocock M C, U S Army, who has been superintendent and chairman of the building committee. The hospital will be accepted by Col Juan Antonio Jimenez secretary of public works, and then will be officially opened by Dr Belisario Powas president of the Republic of Panama.

Vital Statistics in Ecuador—The *Anales* of the Sociedad Medico-Quirurgica of Guayaquil quotes the official record of the mortality in Ecuador in 1921, the first year that such statistics have been compiled. With a population of 2,000 000 the death rate was 24.55 per thousand inhabitants. Infant mortality forms 34 per cent of the total, but only 22.6 per cent in the three larger cities. The deaths after 60 form 10 per cent. Whooping cough leads the list in child mortality with 4,776 deaths, measles, 1,144. The child mortality forms 60 per cent of the total. Pneumonia heads the list in adults, and tuberculosis comes sixth, smallpox and cancer tenth and eleventh. There were only seven deaths from diphtheria and croup and ten from leprosy.

Typhoid Epidemic in Cuba—There remained under treatment August 10, 250 cases of typhoid fever in Havana. Typhoid fever during June increased from 4 cases with 1 death in the first ten days to 173 cases with 18 deaths in the last ten days. This was the beginning of the epidemic, from July 1-10 there were 204 cases with 38 deaths, July 11-20 100 cases with 20 deaths, July 21-31 89 cases with 17 deaths, and from August 1-10 76 cases with 17 deaths. These include cases brought to the city from the interior of the country for treatment. The epidemic has been attributed to the water, of which the city requires about 80 000 000 gallons per day. Little more than half of this amount is supplied from the Vento Springs, the remainder from the Almendares River, which is subject to pollution, especially during the rainy season. This river has now been cut off to prevent infection, leaving the city with only half the necessary amount of water, and defective conditions in the city water mains with surface seepage have been reported. Vaccination against typhoid has been made compulsory under penalty of fine and house to house visits are being made by the sanitary department for the purpose of vaccination, about 6,500 inoculations being made each day.

FOREIGN

School of Tropical Medicine—The London School of Tropical Medicine became incorporated in the London School of Hygiene and Tropical Medicine, August 1. Dr Andrew Balfour is director of the new school. All members of the staff of the former institution have signified their desire to become members of the staff of the new school.

Warning Against Possible Fraud—The *Deutsche medizinische Wochenschrift* recently published an advertisement

asking for a German physician to serve in an American private hospital, giving no address beyond the ad number. Our exchange now warns its readers to be wary of sending the originals of their credentials in applying for such a place and warns against moving to America on the mere statements of the alleged private hospital without making inquiries.

Organization of Medical Women in Germany—This organization is now issuing a quarterly, the first number of which has appeared. Dr. Heusler-Edenhuizen and Dr. Laura Turneau are the editors. The *Bund deutscher Aerztinnen* is affiliated with the Medical Women's International Association, and was well represented at the recent conference at London. The *Nederlandsch Tijdschrift voor Geneeskunde* remarks that it had supposed that the days were past for such "zoological discrimination" between medical men and medical women, that the latter must have a periodical of their own.

Netherlands Council on Pharmacy and Chemistry—The seventh report issued by the *Rijks-Instituut voor Pharmacotherapieutisch Onderzoek* has ten sections. One is devoted to nostrums, one to proprietaries, another to trials of newly marketed drugs. A simplified technique for making insulin is described by Sjollem and Seekles of the Veterinary College at Utrecht. It uses for 10 kg. of beef pancreas only 27 liters of absolute alcohol, the separation of the insulin being aided by ammonium sulphate. The yield from 100 kg. of beef pancreas is 37.34 gm. of insulin, corresponding to 140,000 units. The insulin was tested by the council in three university clinics, answering all expectations.

Typhoid Fever in London—There were forty-two deaths from typhoid fever in London in 1923, and forty-five in 1922. The autumnal prevalence of this disease, formerly so usual, has not been observed in England since 1912. London has had two kinds of epidemic disease commonly diagnosed as typhoid. One of these, due to eating polluted fish and associated with dysentery, may occur in explosive outbreaks but has no tendency to spread from case to case. It increases in the autumn, attacks males from 10 to 25 years of age preferentially, and is mainly limited to the working classes. The other kind of epidemic disease commonly diagnosed as typhoid is met in psychopathic hospitals. It does not occur in explosive outbreaks, has no marked autumnal increase, appears to spread from case to case, attacks females preferentially and has no special incidence in a particular social class. The first type of epidemic disease commonly diagnosed as typhoid has almost completely disappeared in recent years.

Immunization of Infants Against Tuberculosis—Since Calmette's publication on the BCG bacillus and his success with it in immunizing the young (summarized in *THE JOURNAL*, July 12, 1924, p. 155, and August 9, p. 477), he has been besieged with requests to immunize infants. He now reiterates that it would be premature to introduce the method into current practice before time has confirmed its value and harmlessness. "We must wait two or three years to compare the outcome in the vaccinated and nonvaccinated children." As the culture is a living bacillus, it has to be freshly prepared, and cannot be kept for more than ten days. But the Paris Pasteur Institute, 25 rue Dutot, is supplying it free of charge to physicians, on request, who guarantee to apply the vaccine according to directions, that is, exclusively during the first ten days after birth, giving it in a teaspoon with a little tepid milk half an hour before feeding, every second day, to a total of three doses. At present the use of the vaccine is restricted to families in which there is an open source for contagion. He adds that the ordinary tuberculin tests lose all dependability after the vaccination.

Deaths in Other Countries

Dr. Andrew Smith, formerly president of the North of England Branch, British Medical Association, August 1.—Reginald C. Cottell, Col., R. A. M. C., retired, commanding officer, King George's Hospital, during the World War, August 7.—Dr. R. Koralewski, honorary president of the Medical Verband of Lower Austria.—Dr. Albert Narath, professor emeritus of surgery at Heidelberg. He was professor of surgery at Utrecht until 1906, when he succeeded Czerny in the chair at Heidelberg. His great work "Surgery of the Stomach" is now in press.—Dr. Ernesto Fernández Espino, Montevideo, president of the public health service of Uruguay and founder of its official bulletin. He presided at the Sixth International Sanitary Conference, which convened at Montevideo two years ago.—Dr. E. Seton Pattison, senior surgeon of the Atlantic Transport Line, known to thousands of American travelers, September 3, aged 69.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 18, 1924

Medical Women's International Association

The third meeting of the Medical Women's International Association has been held in London. The retiring president was Dr. Lovejoy of New York, and the new president Lady Barrett, M.D. Delegates from fifteen out of nineteen possible countries were present: Great Britain, 7; Australia, 5; United States, 28; South America, 1; Germany, 6; Turkey, 1; India, 12; Norway, 3; France, 3; Switzerland, 2; Czechoslovakia, 1; Austria, 1; New Zealand, 5; Poland, 4; Russia, 2. The foreign delegates were guests of the Medical Women's Federation, a large number of whom attended. Hospitality was arranged for the foreign guests.

MATERNAL MORBIDITY AND MORTALITY

Lady Barrett opened a discussion on maternal morbidity and mortality. She said that the general health of women was far below the standard that could protect them from toxemias. One of the great problems was the health and conditions of life of child-bearing women. In Great Britain there were certain groups concerned in watching the women's health and in improving it, and also groups concerned with the education of physicians and midwives. The midwife was the important factor. She had more leisure than the physician for observing the patient's symptoms. In this respect, she could be an important factor in the prevention of illness or death. The number of maternity clinics, with antenatal and postnatal care as their object, was continually increasing. More and more beds were being provided for women who needed them, and also small homes linked up with large hospitals.

Dame Janet Campbell, senior medical officer of health for maternity and child welfare in the ministry of health, outlined the work of the public health service in relation to maternal morbidity. There had been almost no reduction in maternal mortality during the last thirty years. Three thousand women died last year, or one for every 250 births. In 1902, the Midwives Act had given better midwives, and puerperal sepsis had come down a little but still accounted for two fifths of the maternal deaths. Every case of puerperal fever had to be reported by the physician to the health officer in order that the patient might receive all necessary treatment, and that infection might be prevented. But, in practice, only a small proportion of the cases were reported, and these chiefly when the patient was very ill or dead. It was hoped to improve notification and so make the chances of success better. The local authority had wide powers to improve treatment, and was ready to help the physician or woman who asked for assistance. Antenatal supervision was provided in maternity centers, many of which were staffed by women who were expected to have a special knowledge of midwifery. There were splendid staffs of nurses, and the maternity center provided examination, advice and instruction, and treated minor ailments. Complications were referred to special hospitals. Venereal disease was treated in some centers. Postnatal treatment also was given.

Dr. Balfour (India) said that the circumstances in India were discouraging. Medical men and women were excluded from the normal lying-in room. There were no professional midwives, and the middle-aged native nurses knew nothing and were in the habit of interfering unnecessarily. Medical women were called only to serious complications, and often the mother died or the child was lost. A public health

department now devoted attention to childbirth, but was heavily handicapped. In Bengal, 84 per cent of mothers were under 30, and the mortality of these was 148 per thousand. In 1921, 60,000 women died in childbirth, and 1,000 of tetanus.

Dr Davis (United States) said that the whole subject was bound up with prenatal conditions. The naturally delicate or somewhat degenerate might live badly, and healthy women might do the same. Some American women ate too much and had oversized children. As regarded the nursing technic, something must be wrong when so many cases were lost through infection. A simpler technic might be safer. Every nurse should be taught about gonorrhea in this connection. In the majority of cases, the patient could be made safe, but there was more trouble with toxemia than with infection. In America, eclampsia was often caused by too little exercise and too much food. In infection it was important to use oakum instead of vulvar pads, and to drain the uterus by raising the head of the bed. Incomplete drainage resulted in chronic gynecologic infection. The teaching of midwives was a great problem in the United States. The midwife was ignored, but she prevailed.

Paraffin and Cancer

At the annual general meeting of the Imperial Cancer Research Fund Dr Sidney Martin, chairman of the executive committee, in moving the adoption of the twenty-second annual report, said that the executive committee authorized the inclusion in the eighth scientific report of the monograph of Dr Scott on the paraffin dermatoses and paraffin cancer because of its unique features, which were the long-continued careful observation on workmen exposed continually to a peculiar form of chemical irritation known to induce cancer. The acute and chronic skin lesions in workers in crude paraffin were described and the relation of these lesions to the subsequent development of cancer was discussed on the evidence of the individual histories of the workmen, and the whole body of facts surveyed. Dr Martin drew attention to the absence of any close relation between the intensity of the acute early lesions and the later development of cancer, so that in some individuals only extremely slight indications of skin irritation preceded its development. Another point was the long number of years (never less than fifteen or twenty) after which the disease began. The proportion of the workers in whom cancer developed was found to be less than 2 per cent per annum of those engaged, and Dr Scott has shown that it is mainly in the men engaged in certain stages of the preparation of liquid petrolatum from shale that these cases occurred. On the basis of his findings, a very complete preventive regimen had been instituted by the Scottish Oils Company. This had already reduced the incidence of the acute irritative disturbances in the operatives, but its effect on the occurrence of cancer can be seen only after a longer time. Dr Leitch, director of the research department of the Cancer Hospital, allowed the publication in Dr Scott's paper of a summary of his results in testing the crude and refined oils for their "carcinogenic" powers on animals. These results confirmed the importance of the unrefined oils incriminated by Dr Scott, and showed the innocuousness of the refined product. This fact should reassure those using refined paraffin medicinally who may have become alarmed by these reports of the production of paraffin cancer. Reference was then made to papers mentioned in the report. That of Dr Murray the director, dealt with the meaning of the long period—from ten to twenty years in man, and from five to twelve months in mice—during which cancer-producing agents must act before the disease sets in, and the paradoxical result that, once an animal has become cancerous there is an apparent incapability to induce a fresh growth by applications of tar to another part of the body. These observations illuminated the rarity of multiple primary cancer.

Dr Cramer's vitamin work dealt with an aspect of cancer growth that had led to a great deal of loose speculation. He showed that, when put to the test of direct experiment, no degree of vitamin deficiency compatible with life had any effect on cancer growth.

Low Birth and Marriage Rates

The return issued by the registrar-general gives statistics of births and deaths for the quarter ended June 30, 1924 and of marriages registered in the quarter ended March 31. The births registered in the second quarter of 1924 numbered 187,157, being 1,671 more than in the preceding quarter, but 9,674 fewer than in the corresponding quarter of 1923. They correspond to an annual rate of 19.5 per thousand of the estimated population. This is the lowest birth rate recorded in any second quarter except during the period of the war. The deaths numbered 114,176, and were 46,103 fewer than in the preceding quarter, but 136 more than in the corresponding quarter of 1923. They corresponded to an annual rate of 11.9 per thousand of the estimated population. Influenza was either a primary or contributory cause of death in 4,178 cases, or 3.7 per cent of the total. Infant mortality was equal to 6.9 per thousand, being 1.3 per thousand below the average of the ten preceding second quarters. Seven fatal cases of smallpox were registered during the quarter. The number of persons married in the first quarter of 1924 in England and Wales was 93,990, a decrease of 59,422 from the number in the preceding quarter, and 12,572 below that in the corresponding quarter of 1923. The number corresponds to an annual rate of 9.8 per thousand of the estimated population, and is the lowest rate recorded in any quarter since the establishment of civil registration.

PARIS

(From Our Regular Correspondent)

Aug 15, 1924

The Decrease of Chlorosis

Recent years have brought a considerable decrease in the incidence of chlorosis, not only in France but also in Switzerland, England, America and other countries (*THE JOURNAL*, Sept 22, 1923, p 1033, Jan 19, 1924, p 210 and Aug 9, 1924 p 456). The causes of this phenomenon were recently discussed before the Société médicale des hôpitaux of Lyons. Dr Cordier does not think that better nutrition is the cause. The great privations of the war, in our invaded provinces and in the central empires, did not produce chlorosis. Also Dr Garin and Dr Mouriquand confirm that inanition does not suffice to occasion chlorosis. Garin stated that he had not observed chlorosis among the starved populations of the Balkans during the campaign in the East. Dr Leclerc, who, in 1885, wrote his doctor's thesis on febrile chlorosis, recalled that at that time, his observations concerned, in the main, young girls employed in silk manufacture, who were overworked, poorly nourished and badly housed. Today conditions are entirely changed. In the first place, the class of workers just referred to has been reduced by more than one half, for which various causes have been operative. The food has been improved. Formerly, chlorotic patients were frequently found also among young women from the rural districts who came to the city to work as domestics. From that side, too, an improvement has been noted, as is shown by the present scarcity of domestics. As for the young women of the well-to-do class they live now less secluded lives and are not coddled to the same extent that the previous generation was. They spend more time in the open air, with resultant benefit to their health. Cordier does not accept this as a satisfactory explanation. For the mere fact that some young women have broken away from the close supervision of their parents and are more devoted to tennis than their

mothers were, because a few working girls are a little better washed and breathe a little better air than operatives forty years ago, should that entitle us to be satisfied with the progress of hygiene and justify us in closing our eyes to the fact that the squalid tenement still persists, that the hasty lunch at the bake-shop or the sausage dealer's is still in vogue, and that many a seamstress or needle-woman is still suffering from overwork?

Cordier raises the question whether there was not, toward the end of the nineteenth century, a kind of pandemic attended with anemia, affecting mainly women worn out from overwork and the weakening influences of an abnormal sexual life. Leclerc opposed Cordier's hypothesis, and declared that chlorosis was an affection probably as old as creation. It is described by ancient authors. It is impossible to assume that the disease is of a transitory character occurring at certain periods. It is encountered less and less, in the hospitals especially, but it is still found among urban clients. Also Professor Bard rejects the theory of a pandemic that might have been transitory like all great epidemics. The fact that the disease is confined to one sex and affects that sex at a definite physiologic period does not harmonize with what we know of the laws governing the receptivity of epidemic diseases. The striking feature in the etiology of chlorosis is the very evident connection with the onset of puberty in woman. We must seek, therefore, the causes for its decrease in factors that have a bearing on this particular feature of the disease. Progress in hygiene has resulted in an improvement in living and working conditions as affecting young women of the working class. They have profited especially by the law that raises the age limit which women must reach before they can be employed at manual labor in factories or in domestic service.

The Belgian Apartments in the University City

The *Journal officiel* has just published a governmental decree authorizing the University of Paris to accept the donation of Monsieur J. H. Biermans and Madame Berthe Lapotre, amounting to five million francs, which will bear the name "Fondation Biermans-Lapotre en faveur des étudiants belges en France." The endowment will be used for the construction of apartments suitable for the housing of at least 200 students from Belgium, Luxemburg and Limburg, Holland, who are studying, or may desire to study, in Paris. The apartments, which will be built after the Flemish style of architecture and also furnished in Flemish style, will be erected on the grounds of the University City to which reference has been made in previous letters. Together with the Canadian Apartments, due to the initiative of Senator Wilson and M. Philippe Roy, commissioner general for Canada in France, it will be among the first apartments for foreigners to be established in the University City.

An International Institute of Intellectual Cooperation

M. François Albert, minister of public instruction, has addressed a letter to Prof. Henri Bergson, president of the International Commission of Intellectual Cooperation of the League of Nations, assembled at Geneva, asking him to inform the commission that the French government was willing to establish at Paris an international institute of intellectual cooperation. The plan for the institute will be drawn up by Professor Bergson, and this plan, together with the proposal of the French government, will be submitted to the council of the League of Nations.

Death of Dr. Gustave Richelot

Dr. Gustave Richelot, agrégé professor at the Faculté de médecine de Paris and former surgeon to the hospitals, has died, at the age of 80, at Bernerie (department of the Loire-Inférieure), to which place he retired a few years ago. Richelot was born in 1844 at Paris, where he carried on his

medical studies. He was appointed agrégé professor in 1878, and became surgeon to the hospitals in 1880. He devoted himself more particularly to gynecology. He was a member and a former president of the Academy of Medicine.

Death of Prof. Jean Escat

The death of Dr. Jean Escat, professor of clinical urology, in Marseilles, as the result of a finger prick inflicted during an operation, has been announced. He was a member of the Société française d'urologie and the Association internationale d'urologie. He had been formerly president of the Congrès français d'urologie.

BELGIUM

(From Our Regular Correspondent)

Aug. 20, 1924

The Congress of Neurology

The twenty-eighth Congress of French-Speaking Medical Alienists and Neurologists, under the presidency of Drs. Massary (Paris) and Glorieux (Brussels), has just been held at Brussels.

ABNORMAL CHILDREN AND MENTAL DEBILITY

Drs. Simon and Vermeulen presented a study of children with mental debility. Simon has carried out researches on the children in the colony of Vauluse. He reached these conclusions: Retarded children with the mentality of 2-year-olds make little progress. For children of from 5 to 12 years mentally, the chances of progress increase regularly in proportion as their mental level is higher. The authors are making a special study of epilepsy, insanity (rare in children), and delinquency as complications of mental debility. Of 1,236 children sent to the Moll school of observation by court judges, Vermeulen found 315, or 25 per cent., who were mentally deficient. As might be expected, the age of puberty brings a very evident increase in delinquency. In this connection Dr. Vermeulen discussed in a separate communication the functioning of the section for abnormal children in the Ghent colony. During a period of two and a half years, 274 children have been admitted to the colony. At present, the section comprises 178 children. Seventy per cent. of these children are susceptible of education. A school of three classes has been organized. Special courses are given in the evening for the older children. The personnel comprises a physician, a woman nurse and three women instructors. The assignment to classes is made after an examination by mental tests (the psychographic method of Vermeulen).

THE CONTAGIOUSNESS OF TARDY EPIDEMIC ENCEPHALITIS

Dr. Guillain reported his observation of a case of contagious tardy epidemic encephalitis (parkinsonism) which developed owing to syphilis. A man, aged 22, affected with infantile paralysis, who was allowed to sleep between two patients with postencephalitic parkinsonism, contracted recently typical epidemic (lethargic) encephalitis. There seemed to be no doubt that the infection was derived from an adjoining patient. Consequently, it is indispensable to isolate patients with postencephalitic parkinsonism. Their lesions are not cicatricial but rather in an evolutionary state. In families it should be made known that these patients may be dangerous, especially if they kiss children.

PSYCHIATRIC SERVICES IN PRISONS

Dr. Vervaeck discussed the activities of psychiatric services in prisons. Their purpose is to assure scientific observation of detained persons affected with nervous attacks or psychic disorders or suspected of malingering. During the last three years and a half 608 detained persons have been observed. There were 250 constitutional psychopaths and feeble-minded persons (40 per cent.), 21 per cent. were

neurotics, only 17 per cent were affected with mental alienation properly so called, and 54 per cent were of sound mind

MENTAL AFFECTIONS AND SYPHILIS

Dr Hoven presented the results of his researches on the frequency of syphilis in mental affections. Out of a total of 757 patients with mental illness, 135 gave a positive blood Wassermann reaction, or 17 per cent of the cases. After deducting the cases of general paralysis and pseudoparalysis, there were 95 positive cases, or 13 per cent.

Social Insurance

The lower house of parliament will soon have to deal with the proposed law on social insurance. If this bill is passed, it may bring about a profound modification in the medical profession, for, of 7,000,000 inhabitants, there would be almost 5,000,000 who would come under the application of this law. It is very evident that the liberty of the medical profession might be seriously curtailed if the proposed system should go into effect. The medical profession is plainly much aroused, and the medical journals are filled with articles ardently protesting against the innovation. The medical profession, says Dr Dejece, has the right to ignore the measures adopted with a view to assure medical service to all, also the official fee schedules that will be established. Like other citizens, we can admire the efforts of the mutual societies and the public authorities made with the view of improving the general well-being, but let us preserve our liberty and not permit ourselves to be enslaved by any political party.

To ignore does not signify, by any means, to despise. We shall, in one sense, collaborate wholeheartedly in the enforcement of the law, and, if need be, with self-abnegation in cases in which we shall deem that charity is indicated. But, on the other hand, let us not allow any encroachments on our professional rights.

The dues, or fees, and the subsidies should inure to the advantage of those who will be compelled to accept health insurance and also to the benefit of the voluntary participants in the plan, with a view to assuring them medical care in sickness and indemnities for the loss of wages.

The question of the fees to be charged by the physicians will remain the same as it was before, and what it must, in all equity, continue to be. This question must remain absolutely free for each physician to decide as he thinks best, and the practitioner should in no sense be the object of any coercion. This thorny question, which in every country brings about clashes between the medical profession and the government authorities, is still far from being solved. Many lively engagements have been fought, but the war is still undecided, and no one can at present foretell what the exact solution will be.

To bring to a head this question, which is of such vital importance for the physicians of Belgium, a resolution was passed at the medical convention in Brussels (*Journees medicales*) requesting Dr Glibert, inspector general of the medical service of the ministry of labor, to set forth the modifications to be anticipated in the present law pertaining to industrial accidents as well as the present projects of the legislators. The principles of the law pertaining to industrial accidents are not modified at all. The benefits of the law will merely be extended to all classes of workmen, including those engaged in agricultural and commercial enterprises, together with other employees. An indemnity of 50 per cent of one's wages or salary payable in case of disability may, for more serious incapacity of long duration, be increased to 60 per cent, or to 80 per cent in certain cases of total incapacity.

The free choice of physician does not obtain unless the employer has failed to organize his own medical service. However the new legal provisions require more guarantees

as to the value of the medical service furnished by the employer. Provision is likewise made for the adoption of a notification card to be given a workman when first employed, whereby he will be informed in regard to the character of medical service provided by his employer, if any.

As for the law pertaining to health insurance and premature disability, it will provide for the establishment of an insurance fund by the industrials, the insured and the state. The insurance will cover disability arising through sickness, including tuberculosis, maternal insurance, and accidents other than those provided for in the law pertaining to industrial accidents.

Assistance for Cripples

During the medical convention at Brussels (*Journees medicales*), Dr Dam, director of the provincial institute for cripples, pointed out that the number of cripples in time of peace is at least as large as in time of war. So far our endeavors have been confined exclusively to war cripples, but we should not neglect the cripples of peace times, and we should not only view the problem from the humanitarian standpoint but should seek to rehabilitate such cripples and make them self-supporting members of society. Most cripples of peace times have been cripples since early childhood, and scarcely 60 per cent of them attend school regularly.

In Denmark there is a well organized center which comprises a clinical service of orthopedic surgery, a consultation service, a complete school, an industrial school for young men and young women, and, finally, a seaside sanatorium. In Belgium, we have no central organization as yet, though two provinces have organized such a service, Hainaut and Brabant. In the province of Hainaut, the institution at Charleroi deals solely with industrial education. For the province of Brabant, there is at Brussels a consultation center and a bureau of vocational guidance.

The time seems to have arrived for the creation of a national organization having the full support of the central government.

BERLIN

(From Our Regular Correspondent)

Aug 9, 1924

Adjustment of Health Insurance Controversy

Following is an abstract of the regulations affecting the general content of contracts between physicians and health insurance societies, drawn up by the federal committee entrusted with the adjustment of controversies between the two parties, May 12.

These regulations shall not be interpreted as abolishing the freedom of the *Krankenkassen* and the panel physicians to enter into contracts. They contain, rather, general principles for the adjustment of contract relations between the health insurance societies and the physicians, with a view to securing uniform and appropriate agreements.

RULES GOVERNING THE ADMISSION OF PHYSICIANS TO THE PANEL

Admission of physicians to the panel is accomplished through a special committee on admission to which physicians may apply. Other things being equal, preference is to be given to resident physicians or those wounded in war. A larger number of native physicians than the regulations ordinarily provide for may be admitted, if during the period immediately preceding the application for admission, they had served at least two years in that district or even in hospitals outside the district, and there are personal reasons for making exceptions. Resident, as here used, includes physicians whose families (parents or foster parents) have lived, at the time of the application, for at least five years in the district, or who have lived in person a corresponding

time in the district. Physicians with a fixed salary, also physicians receiving a pension or who have been put on half pay, should not, as a rule, be admitted to panel practice. In the case of a single health insurance society or a league or union of several societies, there shall be a physician for every 1,350 insured, if medical care for the families of the insured is included, there shall be a physician for every thousand insured members. When physicians are permitted to give medical care to the members of several different health insurance societies, or leagues or unions thereof, they shall be counted as serving the individual societies on the basis of the proportionate relation that their membership bears to the total membership of the several societies thus served. If the number of insured that fall to each panel physician is on an average, less than the authorized number but more than two thirds of that number, a 'waiting period' of one year shall be established for that health insurance society or league. Health insurance societies have the right to employ supervising physicians, who are appointed with the approval of the competent representative council of physicians, without intervention on the part of the committee on admissions.

THE PANEL SYSTEM

As regards the panel system, the last system established by contract previous to Dec. 1, 1923, remains in force, if the physicians, on the basis of the transactions of the federal committee under date of Jan. 17, 1924, placed their services at the disposal of the health insurance societies and provided the *Krankenkassen* had not, before that date, introduced another panel system. A panel system cannot be held to be introduced unless, during its operation, the proper care of the members of the society and their families (if family care was included) was assured. If a controversy arises as to which panel system is the valid one, it falls to the arbitration bureau to give the final decision.

MODE OF COMPENSATION

Panel physicians may be remunerated according to a stipulated capitation fee (so much for each insured member monthly or yearly), or according to a case fee (so much for each case, whether extending over one day or a longer period up to some specified limit), or yet again, on the basis of single performances and an accepted schedule of fees. At the request of the *Krankenkasse* every service performed by a physician must, unless otherwise specified, be noted on the patient's record card in the space designed therefor.

If payment is made by a capitation fee, the basis for adjusting the amount of the fee shall be in accordance with the relative morbidity in a given *Krankenkasse* (number of cases yearly to be treated, in proportion to the number of insured) and the average number of performances and the average amount of service that a physician is obliged to render in each individual case.

The stipulated capitation fee or case fee (whichever method of payment is in vogue) shall cover all the services rendered by the physician, but shall not include hospital treatment, special treatments or mileage fees.

In adjusting the fee for family treatment, the married members of a *Krankenkasse* or the heads of families shall pay a certain amount in excess of the amount paid by the unmarried members, which excess shall be determined in accordance with the average number of members in the families of the married members of the *Krankenkasse*.

LIMITATION OF PERIOD DURING WHICH MEDICAL CARE WILL BE GIVEN

If physicians are to be compensated according to the individual services rendered, an agreement must be reached locally as to the length of the period for which medical care will be given. The following statements and suggestions are

to serve merely as examples as to how such limitations may be fixed.

1. Taking the records of all panel physicians and their treated patients, it has been found that, on an average, six and one-half times the consultation fee is sufficient to cover the total fee for a single case of illness. In any event, the total fee shall not exceed seven times the consultation fee.

2. The limitation may be arrived at also by considering the amount of service rendered by the individual panel physician and the number of cases in which he has given treatment, and by establishing the provision that, in all the cases of sickness of the individual panel physician, a certain average number of consultations and visits per case, to be agreed on locally, shall not ordinarily be exceeded in a given quarter.

If necessary, special account may be taken of the particular kind of service rendered by a physician. This form of restriction or limitation shall, as a rule, find application only to such physicians as have to treat a hundred patients per quarter, or, under predominately rural conditions, fifty patients per quarter. Of the total quarterly compensation, after deducting amounts paid for special treatments and mileage expenses (including remuneration for loss of time and carriage hire), there shall, as a rule, not more than a certain percentage, to be agreed on locally, be allowed for special services.

The following items are not to be considered in connection with the limitation of the physician's compensation: special treatments, mileage expense, the more extensive operations (which are usually performed only in the clinic), if their urgency precluded postponement, or if, concerning their performance, a previous agreement was reached with the *Krankenkasse*, also hospital treatment.

Under the general head of special treatments (*Sachleistungen*) may be included all roentgen-ray examinations and treatments together with the medical service, light, heat and irradiation treatments, orthopedic, medicomechanical, electrophysical, baths and inhalational treatments and massage.

Certifications of illness, and all other attests that physicians are required to make in connection with their services rendered a *Krankenkasse*, are regarded as paid for by the general compensation. The panel physician furthermore, is expected, as the outgrowth of contract relations and without further compensation, to give the *Krankenkasse* needed information, statements in regard to the disabilities of patients, as well as all written statements arising out of his business relations with the *Krankenkasse*.

If a member of a *Krankenkasse* is referred by his society to a specialist outside of the district of the *Krankenkasse*, the fee for such service, in case no agreement in advance is reached between the physician and the *Krankenkasse*, shall be determined in accordance with the minimum fees established by the Prussian schedule of fees, unless special difficulties connected with the performance of the service or an undue expenditure of time should justify a higher fee.

For the treatment of referred members of outside *Krankenkassen* in figuring the compensation of physicians according to the individual services performed, the same fees shall be charged as for members of the assisting *Krankenkasse*, in remunerating for the performance of medical services on the same basis as capitation fees and case fees, the minimum fees of the Prussian schedule of fees for physicians shall apply.

Very detailed regulations have been worked out to control the mileage allowance for patients who live at a distance.

SUPERVISION OF THE WORK OF THE PANEL PHYSICIANS

The supervision of the activities of the panel physicians, with reference to their financial statements, the character of the prescriptions given, etc., and also regarding certifications as to members' incapacity to work, is accomplished, inde-

pendent of the supervision of the confidential physicians engaged by the *Krankenkassen*, through an examining commission (control commission, investigation commission) appointed by the representative board of panel physicians (*die Aerztervertretung*) also the *Krankenkasse* participates in the supervising work of the control commission

DUTIES OF PANEL PHYSICIANS

The duties of panel physicians are regulated by an instruction order which constitutes a part of the contract. The federal commission will publish a model instruction order. Until this appears, the following provisions shall be observed.

The panel physicians are under obligations to assume the entire medical care of the members of the *Krankenkassen*, not only as to the extent but also the duration of the cases. They must give the members the full service that they claim for themselves and, according to the regulations of the *Krankenkasse*, are entitled to claim for the members of their families.

Only for very important reasons will panel physicians be permitted to have their assistants or other persons substitute for them constantly during consultation hours or for medical visits. The physicians' committee will decide whether reasons advanced are sufficiently important to allow the granting of such privilege.

The panel physicians are under obligations to refuse to give unnecessary treatment, and especially with respect to the kind and extent of the medical assistance, and in the prescribing of medicines, remedies and tonics, to limit themselves to what is absolutely necessary. In fulfilling their obligations, they must avoid everything that would tend to bring about an unnecessary and superfluous demand for medical care. The federal commission contemplates issuing further detailed instructions on this matter.

The panel physicians are expected, in the prescribing of medicines, remedies, etc., to observe the principles of economy and thrift that have been established by the federal commission. In prescribing tonics, special remedies and special treatments, the consent of the *Krankenkassen* administration must be secured, except in urgent cases, which must be explained. In case of repeated violations of the recognized and accepted rules regulating the prescriptions of panel physicians the latter will be required to make good the extra expense. If controversies arise on this point, the arbitration board provided for in the physicians contract will have the final decision.

Prescriptions for baths, massage, spectacles, trusses or other special articles must be approved by the *Krankenkassen* administration before they are carried out.

Insured members may not be sent to a hospital without the previous consent of the executive committee of the *Krankenkasse* unless the case is urgent.

If the panel physician observes that persons who are under his care simulate illness, wrongfully allege that they are unable to work, or fail to follow the regulations pertaining to patients, particularly the regulations concerning the bearing of members during illness, the *Krankenkasse* must be informed immediately. The panel physician must examine the patient conscientiously and carefully in order to ascertain whether and how long a given patient is incapable of working, within the meaning of the health insurance contract. In this matter, the findings at the medical examination are decisive.

A special endeavor must be made to discover whether an illness is the result of either an industrial accident or an older injury. If such is the case, the fact must be noted in the certification of illness.

The *Krankenkasse* is entitled to have the patient examined at any time by a confidential physician in its employ or by

the committee appointed for such purpose. The attending physician must be informed of the result of the examination. The decision of the confidential physician or the examining committee is decisive. However, the right of appeal to higher authorities may be locally agreed on. If he deems it advisable, the panel physician may himself request a confirmatory examination by the confidential physician of the *Krankenkasse* or by the examining committee. In special cases particularly if the patient persists in certain statements for which the physician can find no objective evidence, the panel physician is under obligations to request a confirmatory examination by the *Krankenkasse* administration.

THE COMMITTEE ON MEDICAL MATTERS

For the adjudication of general matters affecting the panel physicians and the *Krankenkassen* and for the furtherance of mutual relations between the *Krankenkassen* and their physicians, a committee on medical matters (*Arztausschuss*) must be appointed in each *Krankenkasse*, in addition to the special examining committee. The committee on medical matters will be composed of an equal number of members selected from among the panel physicians and from the representatives of the *Krankenkasse*. The chairman of this committee shall be alternately a representative of the panel physicians and of the *Krankenkasse*. It shall be the duty of the committee to participate in the regulation of all matters concerning the medical care of the members of the *Krankenkassen* and the status of the panel physicians. Through suggestions, discussions and expressions of opinion on the adjustment of disability claims, the committee will seek to effect a practical and peaceful solution of all questions that arise.

The committee on medical matters (*Arztausschuss*) shall use its influence to induce the physicians with no clients or a very small number of clients, voluntarily to renounce all claims to admission to the panel of physicians.

The said committee will constitute an arbitration board to decide controversies that arise, between a *Krankenkasse* and the panel physicians, concerning the interpretation and the execution of the existing contract.

If the members of the said committee are unable to reach an agreement on a particular point, they shall choose an impartial referee to decide the question, but with the understanding that such referee shall be a person who is acquainted with the laws and regulations governing health insurance. If the members of the committee are unable to unite on a referee, the director of the insurance bureau (*Versicherungsamt*) having jurisdiction over the *Krankenkasse* shall be requested either to serve as referee or to appoint a suitable person to serve in that capacity.

The decisions of the arbitration board (*Schiedsstelle*) are final and are binding for both parties.

Any costs that arise in connection with a controversy that is referred to the arbitration board must be borne by the losing party. In matters pertaining to property rights, the contestants have access to the ordinary courts of law.

DURATION OF CONTRACT

A contract between panel physicians and a health insurance society must cover a period of at least one year. Unless, at least three months before the expiration of the lifetime of the contract, a written notice to the contrary is served by either party, it shall be understood that the contract is to remain in force for another year. In the same manner, the duration of the contract will continue to be renewable for one-year periods, unless written notice three months in advance of the expiration of the contract shall be served by either party. Any charges for the execution of papers are to be borne equally by the parties to the contract.

Marriages

WARD EDWIN NEWCOMER, McClellandtown, Pa., to Miss Norma Stuart Johnson of Richmond, Va., June 21

WALTER GUERNSEY FREY, JR., to Miss Josephine Meredith Whitehouse both of New York, September 12

CORNELIUS GODFREY COAKLEY, New York, to Miss Mary Louise Perry of Rochester, N. Y., August 12

CHARLES ARTHUR POTTER, St. Charles, Ill., to Miss Althea Whitney of Aurora at Wheaton, August 26

WILLIAM SAMUEL SCOTT and Miss Mary Powell Wilson, both of Fredericksburg, Va., July 31

JOHN RANDOLPH CHITWOOD, Sylvatus, Va., to Miss Dorothy Leonard Lee of Richmond, July 19

WILLIAM VAUGHN STANFIELD, Newton, Ind., to Mrs. Avah Knapp of Bloomfield, August 16

CHARLES THOMAS GRATTIGE to Miss Ama Daubenberger, both of Postville, Iowa, May 20

LINUS J. FOSTER, Ann Arbor, Mich., to Miss Frances Marie Cooney of Detroit, August 18

GEORGE HADLEY CLARK to Miss Elizabeth Phillips, both of Oskaloosa, Iowa, June 11

Deaths

Elbert E. Persons, Lieutenant-Colonel, M. C., U. S. Army, Washington D. C., Northwestern University Medical School, Chicago, 1897, entered the regular army in 1900, served in the Philippines, at Vera Cruz, Mexico and in the Panama Canal Zone, organized the U. S. Army Ambulance Service Training School at Allentown, Pa., in 1918, was in charge of the U. S. Ambulance Service in Italy during the World War, awarded the Distinguished Service Medal, aged 55, died, July 8, at the Walter Reed General Hospital

Theophilus Watkins Evans, Alexandria, La., Tulane University of Louisiana School of Medicine New Orleans, 1914, member of the American Psychiatric Association, served in the M. C., U. S. Army, during the World War, superintendent of the State Colony and Training School, aged 35, died suddenly, August 25, while on a camping trip on the Calcasieu River

William B. Cunnane, Santa Barbara, Calif., Medical Department University of Louisiana New Orleans, 1881, formerly county physician and county health officer, at one time member of the Santa Ynez School Board, aged 69, died, August 21, of a self-inflicted bullet wound while suffering from ill health

George T. Welch, Passaic, N. J., University of Pennsylvania School of Medicine, Philadelphia, 1868, past president of the Medical Society of New Jersey, formerly on the staff of St. Mary's Hospital, aged 79, died, August 27, of injuries received when the automobile in which he was driving was struck by a train

George S. Robinson, Philadelphia, Jefferson Medical College of Philadelphia, 1881, resident physician to the House of Correction and the Philadelphia General Hospital for thirty-seven years and eight years respectively, and the Masonic Home, aged 68, died, August 22, of cerebral hemorrhage

E. Kittredge Sims, Donaldsonville, La., Medical Department of the Tulane University of Louisiana, New Orleans, 1894, formerly mayor of Donaldsonville and for twelve years coroner of Ascension Parish, aged 52, died, August 30, at the Toussaint Infirmary, New Orleans, of pneumonia

James Wiley Beard, Troy Ala., Tulane University of Louisiana School of Medicine New Orleans, 1913, member of the Medical Association of the State of Alabama, served in the M. C., U. S. Army, in France, during the World War, aged 36, died, August 19, of pneumonia

Joseph C. Barringer, Oskaloosa, Iowa, Starling Medical College, Columbus, Ohio, 1873, member of the Iowa State Medical Society, past president of the Mahaska County Medical Society, formerly county coroner, aged 75, died, August 27, following an operation

Edgar James Orvis, Blackwell, Okla., Medical Department of the University of the City of New York, 1884, member of

the Oklahoma State Medical Association, formerly on the staff of the Blackwell City Hospital, aged 70, died, August 19, of heart disease

Frederick William Klein, New York, University of Vermont College of Medicine, Burlington, 1884, member of the Medical Society of the State of New York, aged 71, died, August 10, at the New York Post-Graduate Medical School and Hospital

Samuel P. Gurney, Bridgeport, Conn., Yale University School of Medicine, New Haven, 1901, for twenty-two years a medical missionary in Africa, aged 64, died recently, at a hospital in Salisbury, Rhodesia, Africa, following an operation

Walter Lowa, Philadelphia, University of Pennsylvania School of Medicine, Philadelphia, 1899, member of the Medical Society of the State of Pennsylvania, for nineteen years on the staff of the Wills Hospital, aged 50, died, August 14

David Cushman Twichell, Liberty, N. Y., Columbia University College of Physicians and Surgeons, New York, 1903, member of the American Climatological and Clinical Association, aged 50, died suddenly, August 12, at Keene Valley

John Amandus Lentz, Treichlers, Pa., Jefferson Medical College of Philadelphia, 1920, formerly on the staff of Dr. Haff's Private Hospital, Northampton, aged 27, died recently, at Palo Alto, Calif., of epidemic (lethargic) encephalitis

Florian Krug, New York, University of Freiburg, Germany, 1882, member of the New York Obstetrical Society, formerly on the staffs of the Lenox Hill and Mount Sinai hospitals, aged 66, died, August 20, at Merin, Italy

John Morgan, Rochester, N. Y., Hahnemann Medical College and Hospital of Philadelphia, 1904, member of the American Association of Anesthetists, and the New York Society of Anesthetists, aged 44, died, August 29

Frank Daniel Myers, State Hill, N. Y., University of Michigan Medical School Ann Arbor, 1887, member of the Medical Society of the State of New York, aged 63, died suddenly, August 21, of heart disease

James W. Riffe, Meadow Creek W. Va., University of Louisville (Ky.) School of Medicine, 1892, member of the West Virginia Medical Association, aged 57, died suddenly, August 14, of heart disease

Thomas P. C. Barnard, North Tonawanda, N. Y., University of Buffalo Department of Medicine, 1892, formerly health officer of North Tonawanda, aged 53, died, August 23, following a long illness

Herbert Samuel Pyne, Provo, Utah, George Washington University Medical School, Washington D. C., 1908, also a pharmacist, for four years county physician, aged 62, died, August 15, of pneumonia

Charles Daniel Brooks, East Rutherford N. J., Bellevue Hospital Medical College, New York, 1893, member of the Medical Society of New Jersey, aged 56, died, August 17, at Lockwood, of sepsis

Charles Edward Dimmock Lord, Ruth, Nev., Dartmouth Medical School Hanover, N. H., 1899, aged 50, died August 16, at the Steptoe Valley Hospital, East Ely, of meningitis, following otitis media

Eleanor Dorcas Mann, Schenectady, N. Y., Tufts College Medical School Boston, 1896, member of the Medical Society of the State of New York, aged 56, died, August 27, of cerebral hemorrhage

James Campbell Kroesen, Columbus, Ohio, Medical Department of the University of the City of New York, 1871, Civil War veteran, aged 80, died, August 22, at the Grant Hospital, of carcinoma

Walter P. Rushin, Macon, Ga., Southern Medical College Atlanta, 1886, member of the Medical Association of Georgia, aged 63, died, August 15, at a local hospital, of carcinoma and diabetes

George Francis Deal, Malden Mass., Medical School of Harvard University Boston, 1893, member of the Massachusetts Medical Society, aged 53, died, August 22, of pneumonia

Julius John Robinson, Providence, R. I., Howard University School of Medicine, Washington, D. C., 1898, member of the Rhode Island Medical Society, aged 51, died, August 17

Benjamin Ben Zion Glasgow, New York (nongraduate), member of the Medical Society of the State of New York, aged 53, died suddenly, August 27, of cerebral hemorrhage

Foster William Bassett, Los Angeles, Chicago (Ill.) Medical College, 1889, member of the California Medical Association, aged 63, died, August 21, of cerebral hemorrhage

Benjamin F Mullin, Pittsburgh, Cincinnati (Ohio) College of Medicine and Surgery, 1881, also a dentist and druggist, aged 68, died suddenly, August 20, of heart disease

Frederick Fehleisen @ San Francisco, University of Wurzburg, Germany, 1877, on the staff of the Mount Zion Hospital, aged 70, died, August 28 of angina pectoris

William Bailey Ansley @ Saltsburg, Pa, Jefferson Medical College of Philadelphia, 1867, past president of the Indiana County Medical Society, aged 77, died, August 20

Galen Eugene Miller, Akron, Ohio, University of Michigan Medical School, Ann Arbor, 1923, aged 26, died, July 24, of sepsis, following the extraction of a tooth

H Blake Hendrix, Bonita, Texas, Medical Department, University of Tennessee, Memphis, 1890, aged 58, died, August 4, of a skull fracture received in a fall

William J Higgins, Sayre Pa, Medico-Chirurgical College of Philadelphia 1899, died suddenly, August 20, at the People's Hospital, of cerebral hemorrhage

Benjamin L Hendley, Farmington, Ky Medical Department, University of Tennessee, Memphis, 1889, aged 76, died, August 25, of carcinoma of the stomach

Daniel Todd, Adrian, Mich, University of Buffalo (N Y) Department of Medicine 1851, formerly mayor of Adrian, aged 96, died, August 21, of senility

Alfred Eichler @ San Francisco, Cooper Medical College, San Francisco, 1894, aged 59, died, August 13, at the French Hospital of cerebral hemorrhage

William Thornton Adams, Richards, Mo, University of Louisville (Ky) School of Medicine, 1889, aged 59, died, August 19, following a long illness

Charles Sauter, Louisville, Ky, Louisville Medical College, 1870, member of the Kentucky State Medical Association, aged 76, died suddenly, August 21

James Alfred Deane, Catskill N Y, Bellevue Hospital Medical College, New York, 1865, aged 83, died recently, of myocarditis and acute nephritis

Charles Nelson Needham @ Denver, University of Colorado School of Medicine, Denver, 1907, aged 50, died, August 15, of angina pectoris

Thomas Newton Drake, Pittsfield, Maine, Hahnemann Medical College of Philadelphia, 1884, aged 66, died, August 16 following a long illness

Lawrence John Cardona, Brooklyn, Long Island College Hospital, Brooklyn, 1890, aged 57, died, August 22, of cardiorenal disease

O O Ayer, Arlington, Iowa, College of Physicians and Surgeons, Keokuk, 1876, aged 73, died August 13, of cerebral hemorrhage

John M Hons, San Marcos, Texas, Medical Department, University of Louisiana, New Orleans, 1871, aged 72, died, August 17

W T Sandridge, Wisdom, Ky, Kentucky School of Medicine, Louisville, 1857, Confederate Veteran, aged 94, died, August 16

Christopher M Ware, West Liberty, Ind, Indiana Medical College, Indianapolis, 1871, Civil War veteran, aged 79, died, August 18

Gerrit T Albertus Van Hengel @ Waupun, Wis (licensed, Wisconsin, 1916) aged 81, died, August 26 of senility

Lawrence Ambrose Brock, Boston, Medical School of Harvard University, Boston, 1900, aged 48, died, August 15

B F Fuiks, Lamsburg, Va, Medical College of Virginia, Richmond, 1896 aged 55, died, May 30, of tuberculosis

Phelim Joseph O'Neill, New York, Medical College of Virginia, Richmond 1912, aged 36, died, August 12

Rudolph Von Muralt, Tiltonsville, Ohio (years of practice), also a pharmacist, aged 77, died, August 4

Frank A Liddell, Milano, Texas, Southern Medical College, Atlanta Ga 1881 aged 66, died, August 15

George W Highlands, Lockland, Ohio, Medical College of Ohio, Cincinnati, 1853, aged 98, died, August 2

Louis William Eckels, Sr, Louisville, Ky, Louisville Medical College, 1887, aged 69, died, August 13

Thomas J Clark, Letts, Ind, Eclectic Medical Institute, Cincinnati, 1874, aged 75, died, August 17

Henry Asthalter, Pittsburgh, University of Heidelberg, Germany, 1882, aged 73, died, August 9

Clara A Simonds, Carthage, N Y (nongraduate), aged 64, died, May 25 of pernicious anemia

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNALS BUREAU OF INVESTIGATION OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

"P-O-4" NOT ADMITTED TO N N R

Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following report
W A PUCKNER, Secretary

"P-O-4" is the proprietary nondescriptive designation under which Lehn and Fink, Inc, New York, market a preparation alleged to be a mixture of two parts of tribasic magnesium phosphate and one part of tribasic calcium phosphate. The preparation is claimed to be a "therapeutically balanced" mixture which is "A new Antacid for symptoms of hyperacidity such as 'acid' stomach, pain, heartburn, acid regurgitation, distress and gas"

Recently reports have been published on the use of the well known chemical substances, tertiary (tribasic) calcium phosphate—included in the National Formulary as precipitated Calcium Phosphate—and the tertiary (tribasic) magnesium phosphate as a substitute for sodium bicarbonate. The claim is made that these compounds cannot render the stomach contents alkaline nor produce systemic alkalization. It is reported that the calcium salt is slightly constipating whereas the magnesium compound is slightly laxative and that the tendency of the patient to constipation or to diarrhea determines the nature of the compound to be used.

In order that a correct estimate of the therapeutic value of these tertiary phosphates may be gained, it is important that physicians use them under their proper names and base the selection of one or the other on the requirements of the particular patient. The use of a mixture of the two salts in fixed proportion is not in the interest of therapeutic progress.

The Council finds "P-O-4" inadmissible to New and Non-official Remedies because the use of a mixture of tertiary calcium phosphate and tertiary magnesium phosphate in fixed proportions under a nondescriptive name is irrational and the claim that it is "a therapeutically balanced" mixture is unwarranted.

Correspondence

"CURRENT CRITICISMS OF MEDICAL EDUCATION"

To the Editor —Your recent editorial on this subject, and Dr Pusey's comment, together with his masterly address as President Elect of the Association, reveal facts which every physician needs to digest and ponder, because every day he faces social movements and notes their successful action to the hurt of our profession.

The public health propaganda in every community is now bringing into medical practice such an army of untrained hairbrained cultists and faddists working in and through the public schools and free clinics, that it is up to us to meet this movement by some definite plan of action.

On the other hand the increasing difficulty of completing the present day medical requirements, and of passing the state examination for medical licensure, is forcing many worthy young men and women out of the regular medical field, into the more attractive field of easy practice and easy money, among the irregulars and public health philanthropists of this time, because the socialized gullible public now favors these faddists, and the newspapers magazines and radio lend them publicity.

We can meet this situation only by thinking out a plan that will make premedical work and experience pay, by plac-

ing those who have inadequate training under the supervision of regular members of the American Medical Association in control of these new fields for the medical conservation of the public health.

Free public health work now being carried on in city, state and nation is surely subversive of the best interests of the profession, and a menace to the proper practice of medicine. In our large cities and in almost every community we have free obstetric service giving free advice and medicines. The Sheppard-Towner law secures free advice monthly for expectant mothers through the federal Labor Bureau. Free venereal clinics for men and women, free examinations of children in public schools, and free tuberculosis clinics complicate the picture of the gradual socialization of medicine. Is it any more right that city, state and nation should invade the field of medicine than it would be for it to take over the business of the Standard Oil Company?

May there not be a solution that will secure a gradual measure of relief in making it easier for the prospective medical student to practice medicine under the personal supervision of chosen members of the American Medical Association?

Would not the following plan be a step in the right direction? The granting of a temporary license to practice medicine to third year medical students who declare their intention to complete the regular medical course, who are taking courses in Class A medical colleges, such students to become the assistants of and be under the direct supervision and tutelage of members of the American Medical Association, and to be allowed to practice, after one year of such supervision, in the office of the supervisor and in general practice after two years of such supervision, such practice to constitute the years of internship required of such student after completing his regular course.

This plan would permit prospective medical students to pay their way through college with less difficulty. It would help supply rural communities with qualified men under adequate supervision, and place many new and worthy workers within the ranks of regular medicine.

The fact is, the practice of medicine is getting out of the hands of those who know it and wish to protect its ideals, because of a too rigid and stiff policy of education on the part of the educators and because of the public tendency toward the socialization of medicine under the guise of public health philanthropy. The plan suggested may be one that will help to restore medical practice to the position it should hold in every community, and at the same time make it easier for young men and women to get a medical education. It is offered with the hope that it may provoke a very general discussion through your columns, which shall crystallize in a plan that will work to stay the avalanche of socialized medicine which may soon engulf us, unless we take wise action.

FRANK M. WOOD, M.D., Los Angeles

[COMMENT—It is generally agreed that the problems referred to by our correspondent exist and that efforts for their solution are important. The differences of opinion appear to be in the methods proposed for their solution. These problems are apparently not due to the advances in medical education alone, but are intimately involved with the economic and sociological changes resulting from numerous other developments of this age. No one would dream of doing away with the automobile, the aeroplane or the radio, and it seems equally inadvisable and undesirable, even if it should be possible, to abandon the present day standards of medical education and medical licensure. Even if such retrogression should be possible, however, it would not result in solving the problems under discussion. Longfellow's statement that "new occasions teach new duties" is nowhere more applicable than in the attempt to secure the needed readjustments under present conditions. The various problems arising from the advances in medical education and practice are being studied

with care. Some of them have already been solved, or are thoroughly understood, while for others, solutions may be near at hand. For those, however, which are intimately involved with other sociological and economic conditions, more time will doubtless be required before they can be worked out.—Ed.]

"THE MEDICAL DEPARTMENT OF THE U S ARMY IN THE WORLD WAR"

To the Editor—In a review of "The Medical Department of the United States Army in the World War, Volume XI, Surgery, Part Two" (THE JOURNAL, August 30, p. 707), the following sentence occurs: "The section on ophthalmology was prepared by Brig Gen George E. de Schweinitz, with the aid of Col. Allen Greenwood." This is a misstatement.

Section III, "Ophthalmology in the United States," was written by Dr. de Schweinitz. His sources of information are recorded in the introduction, and the material help he received from many officers on duty in the various ophthalmic sections of the hospitals in the United States is acknowledged in the references at the end of each chapter.

Section IV, "Ophthalmology in the American Expeditionary Forces," was written by Dr. Allen Greenwood, who was, during his service in France, senior consultant in ophthalmology, A. E. F. The references that conclude each chapter of this excellent contribution contain the sources of his information.

Had it been necessary for these officers to aid one another in the preparation of the articles referred to, they would gladly have done so. As this was not required, each is alone responsible for his section, as described in this letter, and as stated in the preface of the volume.

G. E. DE SCHWEINITZ, M.D., Philadelphia

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

COLLOIDAL BENZOIN TEST

To the Editor—I have been trying to discover the technic and interpretations of the colloidal benzoïn test for cerebrospinal fluid and its comparative value as to the colloidal gold test.

LYDIA LACEY, Superior, Wis.

ANSWER—The technic of the colloidal benzoïn reaction in the cerebrospinal fluid is described by Braxton Hicks and Pearce in the *British Medical Journal*, February 16.

1. One gram of freshly powdered Sumatra resin is dissolved in 10 cc of absolute alcohol. The gum benzoïn must be the Sumatra gum obtained as the natural product in brown masses containing white or yellowish-white lumps. This is well shaken and let stand for forty-eight hours, then decanted and 0.3 cc of the clear fluid slowly added to 20 cc of twice distilled water at 35°C. A homogeneous suspension is thus obtained. This suspension must always be freshly prepared for each batch of tests.

2. A 0.01 per cent solution of chemically pure sodium chlorid in water twice distilled through a glass condenser is made.

3. For each cerebrospinal fluid to be examined, a series of six or twelve test tubes is set up. Into the first tube, 0.25 cc of the saline solution (0.01 per cent) is placed, into the remaining tubes, 1 cc. Then 0.75 cc of the cerebrospinal fluid is measured into the first tube and 1 cc of the cerebrospinal fluid into the second tube, 1 cc from the second tube is put into the third tube and mixed thoroughly. One cc from the third tube is put into the fourth tube, and so on, to the next to the last tube when, after mixing, 1 cc is discarded. Thus, the last tube contains only saline solution, which acts as the control tube. Now to each tube, including the control, 1 cc of the gum benzoïn suspension is added and mixed thoroughly. It is allowed to stand on the laboratory bench about twelve hours before reading.

Reading the tubes is simple, three degrees of precipitation being recognized, and these can be represented by the numerals 0, 1 and 2. In the first (0), no change occurs the fluid remaining as in the control tube without any precipitate. The next degree (1) shows some precipitation, but the fluid still remains opaque. In the third degree (2), there is complete precipitation, the supernatant fluid being quite clear.

There are two types of readings that may be regarded as negative or normal. One type shows no change whatever, reading as 0 in all five or eleven tubes. The other types give a precipitate in tubes 7 to 9, inclusive. In these tubes the reading may be either 1 or 2.

The readings that have been considered positive, as in tabes and general paralysis, consist of three types: (a) complete precipitation in all tubes, (b) certain undoubted positives, which have shown a slight deviation from this rule but usually in Tube 11, 10 or 9, (c) some, which have remained opaque in the first tube or three-quarters dilution.

The authors conclude that the colloidal benzoin reaction is a simple test, very nearly as sensitive to syphilis of the central nervous system as the Wassermann reaction. They do not believe, however, that there is a characteristic "luetic" curve as contrasted with a "paretic" curve. A positive result (1 c, precipitates in Tubes 1 to 6 at least) is not obtained with any disease other than syphilis of the central nervous system so far as they were able to ascertain. Definite changes (1 c, other than a complete positive and in the absence of blood) indicate some definite pathologic change in the cerebrospinal fluid, but not all pathologic fluids necessarily show any colloidal benzoin reaction.

The authors illustrate their article by charts and tables which help one to understand this reaction. The full technique of the test may be obtained from La reaction du benjoin colloidal, by G. Guillaumin, G. Laroche and P. Lechelle.

AXILLARY SWEATING IN TUBERCULOSIS

To the Editor—During 1919 and 1920 while engaged in the periodic examination of cases of tuberculosis proved and unproved I noticed that during examination there was frequently sweating from the axilla on one side or the other but rarely on both. This sweating was at times profuse but generally only moderate and usually without knowledge of the patient. In cases in which it did occur and in those in which it was suspected but not bacteriologically proved there was usually at some time sooner or later a positive sputum. It was also noted that the lung involvement was in most of the cases on the same side as the axillary sweating. This is not advanced as an original observation but without any extensive review of the literature I do not recall having seen it mentioned.

GEORGE R. HARRIS, MD, Pittsburgh

ANSWER—Axillary sweating, both bilateral and unilateral, and with the perspiration more pronounced on the affected side, has been discerned by those giving special attention to tuberculosis. However, it seems doubtful that the symptom is sufficiently well marked to be considered a diagnostic or pathognomonic sign. Examination of the axilla of the average person with tuberculosis usually reveals more than a normal amount of moisture even while he is resting.

DEATH DUE TO AFTER DAMP IN MINES

To the Editor—Please give the complete change that occurs in the human body from death due to after damp in mine explosions. What is the cause of death? What ill effects does this leave the subject after resuscitation?

L. H. GREEN, MD, JOHNSTON CITY, ILL.

ANSWER—After-damp is a gaseous mixture of carbon dioxide and nitrogen with small amounts of carbon monoxide. The serious effects of after-damp are usually due to the carbon monoxide, which enters into direct combination with the hemoglobin of the blood.

After resuscitation there is frequently severe headache. Cases are reported in which permanent degenerative changes have been found in the tissues of the brain and central nervous system.

RESULT OF MATING BETWEEN HUMAN BEING AND ANIMAL

To the Editor—Is there any official record of a man or a woman mating with an animal such as a dog, cow, horse or pig and producing offspring? An old English nurse here states that she has seen two cases—one in England (London) and one here in America of a woman having a litter of pups, one of four and the other of five. She also knows of a calf being born part human.

B. R. WINBIGLER, MD, ALEDO, ILL.

ANSWER—There is not the slightest authentic record of such an instance, which has been proved to be physiologically impossible.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ARIZONA	Phoenix	Oct 7-8	Sec Dr W. O. Sweek	404 Heard Bldg Phoenix
CALIFORNIA	Sacramento	Oct 20-23	Sec Dr Charles B. Pinkham	908 Forum Bldg Sacramento
DISTRICT OF COLUMBIA	Washington	Oct 14	Sec Dr Edgar P. Copeland	Stoneleigh Court Washington
FLORIDA	Tallahassee	Oct 14-15	Sec Dr Wm Rowlett	Citizens Bank Bldg Tampa
GEORGIA	Atlanta	Oct 14-16	Sec Dr C. T. Nolan	Marietta
HAWAII	Honolulu	Oct 13-16	Sec Dr G. C. Milnor	401 So Beretania St Honolulu
IDaho	Boise	Oct 7	Dir Mr Chas Laurensen	Boise
ILLINOIS	Chicago	Oct 7-9	Supt of Regis Mr V. C. Michels	Springfield
IOWA	Des Moines	Oct 13	Sec Dr Rodney P. Fagen	Capitol Bldg Des Moines
KANSAS	Topeka	Oct 14	Sec Dr Albert S. Ross	Sabetha
MICHIGAN	Lansing	Oct 14-16	Sec Dr B. D. Harrison	707 S Stroh Bldg Detroit
MINNESOTA	Minneapolis	Oct 7-9	Sec Dr Thos McDavitt	539 Lowry Bldg St Paul
MONTANA	Helena	Oct 7	Sec Dr S. A. Cooney	Power Bldg Helena
NEW JERSEY	Trenton	Oct 21-22	Sec Dr Alex Macalister	State House Trenton
NEW MEXICO	Santa Fe	Oct 13-14	Sec Dr W. T. Jojner	Roswell
OKLAHOMA	Oklahoma City	Oct 7-8	Sec Dr J. M. Byrum	Shawnee
RHODE ISLAND	Providence	Oct 23	Sec Dr B. U. Richards	State House Providence
UTAH	Salt Lake City	Oct 7	Dir Mr J. T. Hammond	Salt Lake City
WYOMING	Cheyenne	Oct 6-8	Sec Dr J. D. Shingle	226 Citizens Bank Bldg Cheyenne

REPORT OF THE COMMITTEE ON EXAMINING BOARD FOR OTOLARYNGOLOGY*

G. E. SHAMBAUGH, M.D., CHAIRMAN
CHICAGO

Your committee, in cooperation with representatives appointed from the following national organizations devoted to otolaryngology—the American Laryngological Association, the American Otological Society, the American Laryngological, Rhinological and Otological Society and the American Academy of Ophthalmology and Otolaryngology—has formulated the following report recommending the establishing of a national board for otolaryngologic examinations and for issuing certificates to those deemed to be qualified to take up the practice of this special field. This report includes the recommendation for the appointment of a joint committee of ten from the organizations named above and the Section on Laryngology, Otology and Rhinology of the American Medical Association, two from each of these organizations. This committee is to constitute the American Board of Otolaryngology.

This report has been acted on favorably, first by the American Laryngological, Rhinological and Otological Society with the appointment of Dr. B. R. Shurly of Detroit, and Dr. F. R. Spencer of Boulder, Colo., secondly, by the American Laryngological Association which has appointed Dr. R. H. Skillern of Philadelphia and Dr. H. P. Mosher of Boston thirdly, by the American Otological Society, with the appointment of Dr. T. H. Halsted of Syracuse, N. Y., and Dr. H. W. Loeb of St. Louis. If the Section on Laryngology, Otology and Rhinology of the American Medical Association passes favorably on the proposition, it will come before the American Academy in the autumn, and the committee should be ready to hold its first examination in connection with the academy meeting.

THE AMERICAN BOARD OF OTOLARYNGOLOGY

Object—The object of such a board of examination is to elevate the practice of otolaryngology by establishing standards of fitness for men engaging in the practice of this

* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

specialty, and the issuing of certificates to men who qualify under the established standards

Desirability of Possessing the Certificate—Such a certificate will be an assurance to the public that the possessor has had the proper preparation to engage in the practice of this specialty. Furthermore, it is proposed that after 1924 the following special societies shall require all applicants for membership to possess such certificate

The American Otological Society,
The American Laryngological Association,
The American Laryngological, Rhinological and Otological Society,
The American Academy of Ophthalmology and Otolaryngology

It is also proposed that the American College of Surgeons, on recommendation of its credential committee, admit without further examination the holder of this certificate

Method—The accomplishing of this purpose shall be vested in a board of examiners to be known as the American Board of Otolaryngology. The board is to consist of ten members, two each from the following bodies

The American Otological Society
The American Laryngological Association,
The American Laryngological, Rhinological and Otological Society,
The American Academy of Ophthalmology and Otolaryngology
The Section on Laryngology, Otology and Rhinology of the American Medical Association

these men to be selected in the same manner as are the presiding officers of their organizations (Details of organization of board and term of office to be determined)

Applicants for the examination and the certificate from the board are divided into three classes, according to the length of time they have practiced otolaryngology

Class 1 Those who have practiced otolaryngology ten years or more

Class 2 Those who have practiced otolaryngology five years and less than ten

Class 3 Those who have practiced otolaryngology less than five years

General Requirements Demanded of All Applicants—1 High ethical and medical standing in their communities, and the possession of a medical degree satisfactory to the board

2 Formal application on a blank provided, accompanied by two letters of endorsement by well known medical men

Special Requirements for the Three Classes

Classes 1 and 2 Men under these classes whose professional record has given them a national reputation for pre-eminence, or such men as have demonstrated a sufficiently high degree of expertness in the special practice of otolaryngology may be given a certificate without further requirements. All others shall be required to furnish reports of ten cases they have observed and treated. The board will determine from examination of these reports and from papers published by the applicant, as well as from his professional work in his community, whether further examination shall be required. Applicants under Class 2, in addition to the ten case reports, may give evidence of having served in otolaryngologic work in special or general hospitals or clinics which the board shall consider in determining whether further examination shall be required before issuing the certificate

Class 3 Candidates under this head must hold a certificate of having completed in a satisfactory manner at least one year's full-time graduate work in otolaryngology in an institution which meets the approval of the board, and in addition shall have devoted another full year to the study of the specialty, serving either as resident in otolaryngology in a general hospital or as intern in a special hospital, or by taking graduate courses in centers of medical teaching or by serving as assistant to an established specialist, all of which work must meet the approval of the board

In lieu of preparation as here outlined, an association with a man of sufficiently high standing for a period of not less

than three years may be accepted at the discretion of the board

The board shall determine after examining these requirements whether a further examination shall be required of the applicant before issuing the certificate

The Examination—In all cases in which the board decides on requiring a special examination in addition to the foregoing requirements, such examinations are to be practical, oral examinations at which a majority of the board shall be present. Such examinations are to be held at such time and place as the board shall decide. It is suggested that one such meeting be held in connection with the session of the American Medical Association in the spring and another in connection with the meeting of the academy in the fall. A favorable vote of a majority of the board present at the examination shall entitle the applicant to a certificate

An applicant who fails to pass this examination may come up for reexamination after two years

Fees—The fee for the examination is to be \$25, but its payment will not be required before the board is ready to issue the certificate

THE CERTIFICATE OF THE BOARD

The American Board of Otolaryngology hereby certifies that
[name] a graduate in medicine of [medical school]
, having pursued an accepted course of graduate study in laryngology and having successfully passed the examining board, is properly prepared to practice the specialty of otolaryngology

Issued ———, 192—

Chairman
Secretary
Signatures of
other members
of board

Book Notices

HANDBUCH DER KINDERHEILKUNDE. Ein Buch für den praktischen Arzt. Herausgegeben von Prof. Dr. M. von Pfaundler und Prof. Dr. A. Schlossmann. III. Band. Third Edition. Paper. Pp. 773 with 210 illustrations. Leipzig: F. C. W. Vogel, 1924.

This volume considers the diseases of the digestive, respiratory and circulatory organs. Prof. Dr. R. Fischl of Prague writes on the diseases of the mouth and tonsils. Prof. Dr. A. Niemann, recently deceased, wrote a very complete and critical review of the nutritional diseases of infants. Niemann reviews the most important clinical and pathologic observations that have accumulated during a score of years. He favors Czerny's etiologic classification, which considers three sources of origin for the nutritional disturbances: (1) nutritional disturbances due to anomalies of constitution, (2) nutritional disturbances of alimentary origin, and (3) nutritional disturbances due to infection. In considering the classification of nutritional disturbances of artificially fed children, Niemann thinks that the clinical classifications, such as those included in Finkelstein's system or in Langstein's modification, are confusing and too theoretical. He believes that it would be better to simplify the clinical description and classification of this group of diseases. For this reason, the author describes the clinical course in a simple manner, and is guided by the leading symptoms that are observed at the bedside of the infant. The two main considerations are the course of the digestive processes within the gastro-intestinal tract, and, consequently, the principal symptom to be observed in this disease group is diarrhea. This main division considers the progress of the infant's development. This depends in large part on the processes in the intermediary metabolism, particularly those which deviate from the normal type. In a word, the classification is divided into two main groups: those babies who are suffering from diarrhea, and those who fail to gain weight and who show lack of development. The author, however, finds it necessary to refer frequently to the clinical types described by Finkelstein and his students, and the dietetic treatment is largely

that of the authors referred to, as well as that of Czerny. It seems unfortunate that various authors cannot agree on some unity in clinical classification, because the same material is used by all, though the nomenclature of the various disease manifestations varies with each individual writer. Hypertrophic stenosis of the pylorus is considered by Prof. Dr. Emil Feer of Zurich. Feer discusses the various theories as to etiology and clinical course, and also considers various forms of treatment, laying some emphasis on the use of the thick cereals, and finally he observes that Rammstedt's operation, the extramascular pylorotomy, is to a large degree the egg of Columbus. In closing his chapter, he hedges by saying that his own opinion is that if breast milk is available and the proper treatment employed, most infants will recover without operation, though if the internal treatment does not succeed, operative treatment should not be delayed too long. An excellent paper on the metabolism of the nutritional diseases is contributed by Prof. L. F. Meyer of Berlin. The chapter on diseases of the nose is written by Prof. F. Goppert of Göttingen, and that on the respiratory diseases by Prof. St. Engel of Dortmund. The last chapter, on diseases of the circulatory apparatus, is contributed by Dr. A. Hecht of Vienna. This chapter considers in great detail the anatomy and physiology, as well as the development history, of the heart and the vascular system. Hecht describes at some length the heart of the new-born and traces in minute detail the development and the changes of the heart and vascular system during childhood. The methods of cardiac examination and the clinical description of cardiac disease are given in fine detail, and show evidence of the years of thought and attention which the writer has devoted to the circulatory disorders of infancy and childhood. This volume maintains the excellent standard of the preceding volumes.

LIFE INSURANCE EXAMINATION Edited by Frank W. Foxworthy, Ph.D., M.D. On the Staff of the Methodist Episcopal and City Hospitals. Cloth. Price \$9. Pp. 738 with 156 illustrations. St. Louis: The C. V. Mosby Company, 1924.

The author has collected a vast amount of material relative to life insurance examinations, special chapters being written by authorities in most of America's life insurance organizations. The volume begins with a most interesting chapter on the history of life insurance which, it appears, dates back to 1762. There follow chapters on group insurance and fraternal insurance and then the business of organizing an examiners' force and the work of the examiners. Special attention is given to such subjects as the examination of women, examination with reference to special diseases, and examination of special portions of the body. Some five chapters are devoted to urinalysis, with especial reference to the finding and interpretation of albumin, casts and sugar. Problems of the South and of the tropics, difficulties relating to insurance in army service, and examinations for health and accident insurance are also considered. The final chapters concern welfare work, fraud on the examiner, the legal aspects of life insurance and the influence of occupation. Like most other composite volumes, this volume suffers somewhat from unevenness, since each specialist has felt the supreme importance of his own point of view. Dr. Foxworthy has edited carefully, however, and no single subject appears to be given undue importance. The greatest emphasis appears to be placed on the practical aspects of the work, so that the book will serve as a most useful volume for any physician interested in physical examination.

RICHTLINIEN FÜR KORPERMESSUNGEN UND DEREN STATISCHE VERARBEITUNG MIT BESONDERER BERÜCKSICHTIGUNG VON SCHÜLERMESSUNGEN Von Dr. Rudolf Martin, o. o. Professor der Anthropologie und Vorstand des Anthropologischen Instituts der Universität München. Paper. Price 50 cents. Pp. 59 with 20 illustrations. Munich: J. F. Lehmanns, 1924.

This small volume covers compiled data from statistics gathered from a large group of children of different ages. Special emphasis is laid on figures relative to weight, height, other body measurements and stature of children school age. The material, while exhaustive, is rearranged and well tabulated, so as to give it a practical value. The plates illustrating normal and defective posture in girls and boys are good. The children studied were German.

Medicolegal

Duty to Ascertain Whether Bone Is Uniting Properly

(Anderson v. Satterlund (Minn.), 197 N. W. R. 102.)

The Supreme Court of Minnesota, in affirming a judgment for \$5,750 in favor of the plaintiff, says that he fractured the femur of his left leg Nov. 19, 1921. A roentgen-ray examination showed a somewhat oblique break. The defendant testified that he placed the ends of the bone in apposition and applied a plaster cast extending the full length of the leg. Then a second roentgen-ray examination was made, which showed that the ends of the bone were together, with only a slight projection at one edge. Two or three days later, the cast was split. Strips of adhesive tape across the fissure were used to keep the cast rigid, and sand bags were placed on each side of the leg to hold it in the proper position. The defendant visited the patient from time to time, and by looking at his toes ascertained that the circulation of the blood was good. No weights were attached to the leg at any time, the defendant being of the opinion that the cast would keep the ends of the bone together. December 18 the plaintiff told the defendant that he had been moved during the night and that his leg did not feel the same as it had before. Immediately a third roentgen-ray examination was made. It showed that the ends of the bone were overriding. The plaintiff was told of this and that the bone could be rebroken and reset. He declined to have this done, his objection being that he would be kept in the hospital too long. Nothing more was done, and January 10 the defendant was dismissed and another physician called to take charge of the case. When the defendant first saw the plaintiff, and again when the third roentgenogram was taken, he advised him to have the leg opened and a metal plate attached to the bone to hold the broken ends together, but on being told that there might have to be a second operation to remove the plate the plaintiff would not consent. The second physician, who characterized his subsequent treatment as "watchful waiting," was of the opinion that it was best to let the bone unite as it was. The trial of this action for damages took place, April 9, 1923. The plaintiff testified that the leg was improving but was about 2 inches shorter than the right one, and was still weak. A physician who furnished the medical expert evidence for the plaintiff gave it as his opinion that, judged by the standards of the allopathic school of medicine, to which the defendant belonged, the plaintiff did not receive proper care and treatment because no extension weight was attached to the leg, and because the position of the broken ends of the bone was not ascertained by the use of the roentgen rays after the cast was applied.

A consideration of all the evidence leads the supreme court to the conclusion that it was for the jury to determine whether the overriding of the broken ends of the bone resulted from the defendant's failure to exercise proper care and skill. The evidence showed that in applying the cast he was following an approved method of treating a fractured femur, that it was not bad practice to use the cast without attaching a weight to the leg and that the ends of a broken femur cannot always be kept from overriding, no matter what method is employed to reduce the fracture. The court rests its conclusion that the case was for the jury on the evidence relating to the manner in which the patient was treated after the bone was set. There was an interval of four weeks between the date when the cast was applied and the date when the defendant discovered that the broken ends of the bone were no longer in the proper position. During that period he seemed to have assumed that the cast was holding the bone in the position shown by the second roentgen-ray examination. When the ends slipped was left in doubt. It would seem that the defendant should have done something to ascertain from time to time whether the bone was uniting properly. At least the jury might find that in the exercise of reasonable care he should have done more than he did. The showing of a failure to exercise reasonable care and skill was not clear or convincing, but the evidence furnished a basis for a rational inference that there was negligence in the respect mentioned.

Anesthetist Not Responsible for Negligence of Surgeons— Patient's Husband as Witness

(Jett v. Linville (Ky.) 259 S W R 43)

The Court of Appeals of Kentucky, in reversing a judgment for \$1,000 obtained by plaintiff Linville against defendant Jett, says that an operation was performed on the plaintiff by two surgeons on account of a flow of blood from the uterus, which was retroverted and rendered immovable by adhesions. During the operation, the surgeons took a stitch in the mouth of the cervix and placed gauze in the vagina, but it was insisted that after the operation the gauze was removed and the stitch taken out—that the stitch could not have been reached without the removal of the gauze. A little more than two weeks afterward the plaintiff complained to the defendant of a feeling of discomfort, which led him to make an examination in which he found protruding from the mouth of the vagina a piece of cotton or gauze about two inches long and probably about half an inch in thickness. In her petition, the plaintiff alleged that her person had been greatly irritated by this cotton or gauze, that she had suffered excruciating pain as well as great mental anguish on account of it, that she was caused to be sick and nervous, and that her health was permanently impaired.

But, after a careful review of all the testimony offered in this case, this court can find nothing of a substantial nature calculated to sustain these contentions. The fact that just six months after the operation the plaintiff gave birth to a healthy strong, normal baby would not tend to induce or strengthen the belief that she was inconvenienced to any extent, or that she had just cause for complaint. Moreover, in any event the testimony showed conclusively that the defendant could have taken no part whatever in the operation performed other than administering the anesthetic. It is a well established rule in surgical operations that the anesthetist is directly chargeable with the physical condition of the patient in the operating room, and his attention must always be directed solely to administering the proper amount of the anesthetic and continuing its supply in just such proportions as will insure the patient's remaining in a comatose condition while the knife is being used. Indeed, it is strange that in their deliberations the jury should have dismissed the surgeons and have found against this defendant, as it was forcibly demonstrated that if any of the attending physicians were responsible for the alleged carelessness and neglect, it must have been the surgeons who performed the operation, and not this defendant, who only administered the anesthetic.

At the conclusion of the plaintiff's testimony, her husband was introduced, and over the strenuous objections of attorneys for the defendant was allowed to testify in detail relative to the case, in open defiance of all precedent and directly contrary to Section 606 of the Civil Code of Kentucky. On what possible theory or state of circumstances the trial court permitted the husband to testify in this action this court is unable to understand, but the conclusion is inevitable that the trial court erred seriously in so doing, and, if for no other reason, a reversal would be imperative. Stripped of the husband's testimony the case should never have been permitted to go to the jury. Indeed, it would be exceedingly dangerous to permit a case of this character to go to the jury on such flimsy evidence as was woven by the plaintiff.

Distinction Between Assault and Battery of Unauthorized Operation and Malpractice

(Hershey v. Peake (Kan.) 223 Pac R 1113)

The Supreme Court of Kansas says that, generally speaking, certain cases announce and apply the rule that (a) A person (in possession of his faculties and in such physical health as to be able to be consulted as to his condition, and no emergency existing making it impracticable to confer with him) has the right to say whether or not any contemplated surgical operation shall be performed on him, (b) a surgical operation performed on such a person without his consent is wrongful and unlawful and amounts to a trespass on the person and is assault and battery, (c) such a person may maintain an action against the surgeon for damages, if any

have been sustained, because of such wrongful operation, and (d) such an action may be maintained though the surgeon was learned and skilful and exercised due care and skill in all he did. But this court does not find it necessary in this case to approve or to disapprove the principles announced and applied in those cases.

The question for decision here was whether or not the statute of limitations of the state had run so as to bar the action. This depended on whether the petition stated a cause of action for assault and battery or a cause of action for malpractice. If the former, the one-year statute of limitations applied, and the action was barred, as the injury complained of was alleged to have been sustained in April, 1919, whereas this action was commenced in January, 1921. But if the petition stated a cause of action for malpractice, the two-year statute applied and the action was brought in time.

The fundamental distinction between assault and battery, on the one hand, and negligence such as would constitute malpractice on the other, is that the former is intentional and the latter unintentional. The petition in this case charged the defendant with pulling the wrong teeth and that in doing so he neglected to use reasonable and ordinary care and skill that he carelessly disregarded the knowledge he had obtained from the examination of a roentgenogram and his own examination of the plaintiff's jaw and teeth, and that when his attention was called to the fact that he had pulled the teeth on the wrong side, he admitted it and said that he did not know why he had done so. As the picture and his own examination showed plainly which teeth were affected. The trial court rendered judgment for the defendant on the pleadings, holding that the petition stated a cause of action for assault and battery which was barred by the one-year statute of limitations, but the supreme court holds that the petition stated a cause of action for malpractice rather than one for assault and battery, and reverses the judgment of the trial court, with directions to overrule the defendant's motion for judgment on the pleadings.

As applied to a surgical operation, the supreme court restates in its syllabus that the distinction, ordinarily, between an unauthorized operation amounting to assault and battery on the one hand and negligence such as would constitute malpractice on the other, is that the former is intentional and the latter is unintentional.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Oto-Laryngology Montreal Canada Sept 15-20 Dr Luther C Peter 1529 Spruce Street Philadelphia Secretary
American Association of Obstetricians Gynecologists and Abdominal Surgeons Cleveland Sept 18-20 Dr James E Davis 111 Josephine Avenue Detroit Secretary
American Association of Railway Surgeons Chicago Oct 15-17 Dr Louis J Mitchell 29 East Madison Street Chicago Secretary
American Child Health Association Kansas City Mo., Oct 15-17 Dr Philip Van Ingen 125 East 71st Street New York Secretary
American College of Surgeons New York Oct 20-24 Dr Franklin H Martin 40 East Erie Street Chicago Director General
American Public Health Association Detroit Oct 20-23 Mr Homer N Culver 370 Seventh Avenue New York Secretary
Central States Pediatric Society Rochester Minneapolis Oct 30-31 Dr H T Price Westinghouse Building, Pittsburgh Secretary
Colorado State Medical Society Denver Oct 7-9 Dr T B Stephenson Metropolitan Building Denver Secretary
Delaware State Medical Society Milford Oct 14-15 Dr W O LaMotte Industrial Trust Building Wilmington Secretary
Indiana State Medical Association Indianapolis Sept 24-26 Dr Charles N Combs 221 South 6th Street Terre Haute Secretary
Kentucky State Medical Association Louisville Sept 23-25 Dr A T McCormack 542 West Main Street Louisville Secretary
Medical Association of the Southwest Kansas City Mo Oct 13-18 Dr E H Skinner Rialto Building Kansas City Mo Secretary
Minnesota State Medical Association St Cloud Oct 8-10 Dr Carl B Drake Guardian Life Building St Paul Secretary
Missouri Valley Medical Society of the Des Moines Sept 17-19 Dr Charles W Fassett 115 E 31st Street Kansas City Mo Secretary
Nevada State Medical Association Reno Sept 12-14 Dr Claude E Pierson Masonic Temple Reno Secretary
Pennsylvania Medical Society of the State of Reading Oct 6-9 Dr W T Donaldson Jenkins Arcade Pittsburgh Secretary
Vermont State Medical Society Burlington Oct 9-10 Dr W G Ricker St Johnsbury Secretary
Virginia Medical Society of Staunton Oct 14-17 Miss Agnes V Edwards, 104½ West Grace Street Richmond, Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL for a period of three days. No foreign journals are available prior to 1920 nor domestic prior to 1923. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Gynecology, St. Louis

S 131 256 (Aug.) 1924

- *Etiology of Congenital Structural Defects H J Bagg New York—p 131
- *Natural Immunity in New Born L K Musselman New Haven Conn—p 141
- Painless Childbirth by Synergistic Methods II J T Gwathmey R A McKenzie and F J Hudson New York—p 154
- *End Results After Operations for Uterine Prolapse H Grad New York—p 163
- *Intracranial Hemorrhage in New Born, Significance of Yellow Spinal Fluid and Jaundice W Sharpe and A S MacLair New York—p 172
- Study of Placentas with Regard to White Infarcts F P McNalley St. Louis—p 186
- *Incontinence of Urine Due to Relaxed Vesical Sphincter H D Furniss New York—p 195
- Internal Migration of Ovum in Guinea Pig P B Kinney, Stanford University, Calif—p 198
- Contraindications to Radium in Treatment of Diseases of Female Pelvis F E Keene Philadelphia—p 201
- Fibroid Tumors W Neill Jr Baltimore—p 205
- *Purpura Hemorrhagica Treated with Radium and Roentgen Ray C Goldmark and A W Jacobs New York—p 208
- Mixed Cell Tumor of Uterus S Wiener New York—p 211
- Two Cases of Diaphragmatic Hernia J D Clark Wichita Kan—p 216

Etiology of Congenital Structural Defects—Hereditary defects associated with roentgen-ray irradiation have been studied by Bagg. A group of mice from a well known homozygous strain was divided by chance into two parts. In one group both male and nonpregnant female animals were irradiated for twelve seconds on each of five consecutive days with a light dose of unfiltered roentgen rays. The animals were then mated. Those of the other groups were also mated and kept as a control. In the third generation of one of the irradiated lines an animal was found with a defective eye. Later many such animals were obtained. The defect has been found to be definitely inherited and in certain families occurs in 100 per cent of the offspring of defective parents. The abnormality behaves as a mendelian recessive. Although the control animals have been subjected to exactly the same inbreeding as were those from irradiated parents no such hereditary abnormalities have been found. Other structural disturbances have been closely associated with the eye defect. Abnormality of the limbs, clubfeet, syndactylism and polydactylism have been most prominent. Bagg has also noted the occurrence of various kidney abnormalities in this strain, from a partial to complete absence of one kidney to congenital absence of both. The examination in utero of many young from abnormal parents has led Bagg to the conclusion that developmental defects are mainly of the nature of arrested development.

Natural Immunity in New-Born—Musselman's studies indicate that the infant is only partially, if at all, dependent on its mother for the development of normal antibodies, or of natural immunity.

Results of Operations for Uterine Prolapse—The study made by Grad of fifty-three cases of prolapsus uteri shows that childbirth is the cause. In 21 per cent of the cases the prolapsus developed after the first childbirth and in 72 per cent the prolapse is of the third degree. In 39 per cent of the cases the prolapse came on after two or more children were born. Instrumental delivery appears to have no bearing on the cause of uterine prolapse. There were 41 per cent of instrumental deliveries as against 59 per cent of non-instrumental. Operation was successful in 75 per cent of cases. The interposition operation was used in the various degrees of prolapse.

Intracranial Hemorrhage in New-Born—Ten per cent of 100 consecutive deliveries reviewed by Sharpe and MacLair presented spinal fluids which contained evidences of intracranial trauma. In four cases the cerebrospinal fluid was bloody and in six cases it was yellow, in only four of which red blood corpuscles were demonstrable. The yellow spinal fluid of new-born babies is probably the result of transudation of the blood plasma when red blood corpuscles are absent, and due to minute hemorrhages when red blood corpuscles are present. Of four cases of icterus neonatorum in this series only one had yellow spinal fluid. Early lumbar puncture is advocated in the absence of shock not only for its diagnostic but also for its therapeutic value in early cases of cerebral hemorrhage and cerebral edema. Repeated spinal drainage at least every twelve or twenty-four hours is indicated, dependent on the size of the intracranial extravasation or the amount of cerebral edema as registered by the spinal mercurial manometer. A modified subtemporal decompression and cranial drainage should be advocated only when the lumbar puncture drainage fails.

Urinary Incontinence Due to Relaxed Sphincter—Furniss' operative experience with the cure of this form of incontinence consists of twenty-one cases, in eighteen of which the Kelly technic was used, and in three the suprapubic technic. There were no mild cases. Of the moderate class there were eight, six were successful and two were not heard from. Of the nine in the marked class there was no report on two, one was a failure, one a partial success and five very satisfactory. Of four with complete incontinence, one was a failure, one moderately benefited and the other two were gratifying successes. One of the latter had, in addition to the sphincter lesion a urethrovaginal fistula due to a very difficult forceps delivery. The slightly benefited one had had four previous operations.

Radiotherapy of Purpura Hemorrhagica—Purpura hemorrhagica following pregnancy generally ends fatally. Recovery ensued in the case cited by Goldmark and Jacobs. The authors are of the opinion that radiotherapy in some manner contributed to the favorable outcome. The most threatening phenomenon was the metrorrhagia. Radium therapy was followed by a clinical arrest of the disease which had been lasting for eighteen months, while no other method of therapy was able to produce this effect.

Journal of Urology, Baltimore

12 93 192 (Aug.) 1924

- II Studies on Ureter and Bladder. Regurgitation of Vesical Contents R C Graves and L M Davidoff Boston—p 93
- *Effect of Prostatectomy on Fertility in Rats. Artificial Insemination A Strauss Cleveland—p 105
- Bacteriology of Ureteral Cultures D W MacKenzie and W J Cochrane Montreal—p 113
- Renal Infundibular Stricture Producing Hydrocoelyx W E Lower and G W Belcher Cleveland—p 121
- *Unilateral Kidney with Fusion of Poles V J LaRose Bismarck, N D—p 127
- *Vas Function After Vasotomy W L Ross Jr Omaha—p 135
- *Diathermy Specific for Gonorrheal Epididymitis B C Corbus and V J O'Connor Chicago—p 139
- *Syphilis of Epididymis H C Rolnick Chicago—p 147
- *True Bilateral Hermaphroditism with Periodic Hematuria V G Burden Rochester Minn—p 153
- *Primary Carcinoma of Female Urethra Treated by Diathermy V J O'Connor Chicago—p 159
- Traumatic Diverticulum of Urethra I R Sisk Madison Wis—p 169
- Case of Vesical Bilharziasis T V Williamson and E M Townsend, Norfolk Va—p 175
- *Diverticulum of Bladder Containing Large Calculus N P Rathbun, Brooklyn—p 181
- Diagnosis of Bladder Diverticula by Contrast Method V J LaRose, Bismarck N D—p 185
- *Suprapubic Drainage Tubes J N Vander Veer Albany N Y—p 189

Effect of Prostatectomy on Fertility—Strauss' experiments show that either the prostate or the seminal vesicle is necessary for natural impregnation in the white rat as removal of both makes the male sterile.

Unilateral Kidney with Pole Fusion—In the case cited by LaRose the kidneys were fused at both the upper and lower poles to form a ringlike mass with the pelvis and calices situated directly opposite to the normal relations.

Function After Vasotomy—Ross asserts that vasotomy need not be followed by occlusion of the vas, and that this is certainly not a uniform sequel of operation

Diathermy in Gonorrheal Epididymitis—Corbus and O'Connor regard diathermy as a method of inducing heat within the body of the epididymis, testis and spermatic cord. By using the electrode described the gonococcus can be destroyed rapidly in its local invasion, obviating prolonged inactivity or operative intervention. The authors' results with this method have been so uniformly satisfactory that they describe it as one which is specific for gonorrheal epididymitis

Syphilis of Epididymis—Rohnick has seen four cases of syphilis of the epididymis, one of which was considered a primary epididymitis

True Bilateral Hermaphroditism—Burden reports an instance of true hermaphroditism of the bilateral type, as evidenced by the presence of ovaries and testes on both sides. There was also proof of the functional activity of the two different genital glands. A careful survey of the literature failed to reveal a similar case

Primary Carcinoma of Urethra—In the case cited by O'Connor a very extensive urethral carcinoma was locally destroyed with subsequent complete healing of the urethral and vulval regions. Complete urinary function was retained and local symptoms were completely relieved by the procedure. It is suggested that diathermy offers a method which is superior to any previously described in effecting the local destruction of carcinoma of the female urethra

Bladder Diverticulum—Rathbun has operated on eleven large bladder diverticula, only one of which contained a calculus. The diverticulum was entirely filled with the calculus and densely adherent to the surrounding structures. The sac was inverted into the bladder through the dilated orifice by a combination of traction from within and careful dissection from without. The sac was amputated within the bladder, the bladder wound repaired, and the remainder of the wound partially closed with rubber tubes, and drains as usual

Suprapubic Drainage Tubes—Vander Veer uses rubber bands fastened to the drainage tube by means of adhesive tape to act as guy ropes and thus maintain the tube in position

Military Surgeon, Washington, D C

55 145 296 (Aug.) 1924

Neuropsychic Functions Concerned in Leadership F F Hutchins — p 145

*Influence of World War on Surgical Tuberculosis: America's Viewpoint W S Bambridge — p 164

Affectivity I F Peak — p 196

Administration Principles and Application W H Bell — p 209

Standardization of Biologic Stains R E Scott and I W French — p 229

*Medical Officer and Chemical Warfare H L Gilchrist — p 244

Clinical Studies in Military Delinquency II Method of Character Study Suitable for Any Station E King — p 262

Influence of World War on Tuberculosis—The presentation of American experience during the war and in the post-war period, with respect to surgical tuberculosis, is the main objective of Bambridge's report. In the approximate number of 2,753,922 men being about four fifths of the men between 18 and 30 years of age who were physically examined and whose examination furnished the statistical information on defects found in drafted men, compiled from the draft records, published by the War Department, the disease group of tuberculosis constituted 4.5 per cent of the defects found. Altogether, 9,312 cases of tuberculosis of other organs than the lungs were recorded. Last year's admission rate of military patients to army hospitals for treatment of this disease in all forms, was 3.53 per thousand for the entire army, the total number of cases reported being 727. At the end of April, 1922, there were 11,346 tuberculous veterans hospitalized at government expense in the United States. There are now over 1,100 associations in the United States concerned with the preventive movement against tuberculosis and the annual expenditure of these preventive organizations is over \$4,000,000. The expenditure of public agencies engaged

largely in the treatment of tuberculosis aggregates over \$30,000,000 annually. During and since the World War, many cases of osteo-articular, glandular and urogenital tuberculosis have been observed, and these manifestations of surgical tuberculosis are now explained as the secondary evidence of a latent systemic infection with the tubercle bacillus

Warfare Gas Disability—Of 1,036 applications for compensation filed by ex-soldiers in the Veterans' Bureau Washington, D C 352, or 34 per cent, attributed their disability to the after-effects of warfare gases, and of this number 103 did not inhale enough gas to require medical treatment. A large percentage of the number stated they did not know at the time that they were gassed, and forty-five others were so slightly gassed as to require only first-aid treatment. It seems to be an established fact in the minds of many, including members of the medical profession that all who were exposed to the fumes of warfare gases during the great war will sooner or later develop tuberculosis. From a careful analysis made by Gilchrist of this entire subject that required over two years for its completion it does not appear that lung lesions caused by gas predispose to tuberculosis, and also that it does not increase the tendency for tuberculosis to localize in the lung

Minnesota Medicine, St Paul

7 535 574 (Aug.) 1924

*Tuberculosis Control in Minnesota F L Tuohy Duluth — p 533

*Decline in Tuberculosis Revealed in Necropsies H I Robertson Rochester — p 543

Foreign Bodies in Lophagus and Air Passages P P Vins Rochester — p 546

Etiology of Intestinal Obstruction F M Jones St Paul — p 548

Surgical Differential Diagnosis of Acute Intestinal Obstruction F J Plonke St Paul — p 551

Medical Conditions Simulating Intestinal Obstruction J A Lepak St Paul — p 555

Classification and Treatment of Hemorrhoids W A Fandler Minneapolis — p 556

*Ethylene Anesthesia J R Aurelius St Paul — p 559

Tuberculosis Control in Minnesota—Tuohy contends that as far as the average private physician is concerned he has passed up almost entirely the matter of the treatment of the tuberculosis patient and expects the sanatorium to look out for him indefinitely. This is fortunately as illogical as it is unnecessary. The same complaint has been made relative to insane asylums and institutions for the feeble-minded, and on the whole is a reflection on the sincerity of practitioners who present an agonized protest to any suggestion of instituting various grades of state medicine. Nevertheless this considerable segment of practice is abandoned and the doctors furthering this plan are sincere in the belief that many well trained patients will be perfectly willing to employ their home physician and pay him for his services provided he shows enough interest to familiarize himself with the principles involved and proceed along with the patient in the attainment of his cure. Furthermore, if every positive sputum case were under such supervision and control as to give the patient surroundings that make unlikely the infection of others, the control of tuberculosis should be just as sure as that of yellow fever where the mosquitoes are not allowed contact with the infected human

Decline in Tuberculosis Incidence—Among 250 complete postmortem examinations made by Robertson or under his direction during 1903-1919 inclusive, there was no evidence of tuberculosis in 30 per cent and evidence of active tuberculosis in 27.6 per cent with 16 per cent of healed cases and 26.4 per cent adhesions. Among 250 cases similarly observed by another pathologist during 1923-1924, the findings were 39.2, 6.4, 10.4 and 44 per cent, respectively. In 1,000 necropsies performed by Robertson or supervised by him in 1923-1924 at the Mayo clinic, the findings were 20.1, 4.5, 63.0 and 12.4 per cent, respectively. Analysis of these cases as to age shows that the younger generations are acquiring a total immunity in far greater degree than the older generations. In fact, if healed lesions are found in a parent, there is some ground for assuring the son or daughter of a relatively increased immunity in themselves

Ethylene Anesthesia—Of the 300 cases of ethylene anesthesia reported on by Aurelius, 194 were major surgical

procedures, which included 12 cholecystectomies, 20 salpingectomies, 43 appendectomies (of which 27 included general peritonitis), 22 herniotomies, 8 hysterectomies, 3 thyroidectomies, 5 ectopic pregnancies, 3 thoracoplasties and 2 gastroenterostomies. The minor surgical procedures were chiefly perineal repairs, curettements, abscesses, reduction of fractures and the like. The age limits varied from an infant, aged 2 months, to an adult male, aged 77 years. For both age extremes, ethylene anesthesia had no bad effects, but rather seemed an ideal anesthetic because of the ease and rapidity of induction, the quiet undisturbed respiration, the regularity of the pulse during the anesthesia and the absence of any untoward postoperative symptoms such as shock, pulmonary involvement or severe vomiting. Aurelius has experienced nothing that would indicate that ethylene anesthesia is anything but the safest and most desirable anesthesia at present available for the extreme age limits. For the 300 cases 208 hours of ethylene-oxygen gas were used, giving an average of forty-three minutes per case, with seven cases consuming more than two hours. In forty of these cases, ether was used at some stage of the operation, sometimes to aid relaxation or during induction in cases where the patient was unduly excitable or unyielding. In the great majority of cases the relaxation has been very satisfactory for practically all major procedures. The relaxation is definitely more complete than with nitrous oxide and less than with ether in some cases. The recovery from the anesthetic has been uniformly prompt in all cases, even when ether has been used. The results from ethylene anesthesia from the standpoint of postoperative nausea and vomiting have been very gratifying. Gas pains have been the source of very little complaint. The general convalescence has unquestionably been far more uneventful and definitely more rapid in the ethylene cases and the general condition of the patient, especially the first postoperative days, is better than with other anesthetics. This is a factor in speeding up the convalescence and a patient's stay in the hospital. Pulmonary conditions apparently are not affected by the ethylene anesthesia, at least it can be given with relatively very little danger. The cost of ethylene-oxygen anesthesia is considerably less than for nitrous oxide, and though more costly than ether, its many advantages definitely offset this increased cost.

Missouri State Medical Association Journal, St. Louis

21 257 296 (Aug.) 1924

- *Treatment of Nasal Ganglion in Hay-Fever R. J. Payne St. Louis — p. 257
- Vesical Neck Obstructions Author's Caution Punch J. R. Caulk, St. Louis — p. 259
- Doctor in Politics G. W. Robinson Kansas City — p. 268
- Cesarean Section Q. U. Newell St. Louis — p. 269
- Professional Observations in South America W. T. Grinstead Cairo Ill. — p. 274
- *Diabetic Gangrene of Nose E. S. Connell Kansas City — p. 277

Treatment of Nasal Ganglion in Hay-Fever—Ganglion anesthesia has been utilized in the Washington University clinic for some years, with its application growing wider and wider until at the present time, Payne says, they have data of its influence on many forms of nasal maladies. The pronounced effect of chemicals and drugs is on the sensory and secretory apparatus. However, there is a motor influence also, as shown in the palatal arch. Many obscure head pains speedily disappear under ganglion anesthesia to reappear and vanish again following subsequent applications in such mathematical precision that there can no longer be any doubt as to its control. Payne has made alcoholic injections into the nasal ganglion of forty-three hay-fever cases with most satisfactory results. The results varied from an amelioration, such as to cause the individual to suffer but little discomfort, to complete relief. In three cases only was there complete failure to produce any relief whatsoever.

Diabetic Gangrene of Nose—Connell failed to find diabetic gangrene of the intranasal structures reported in the literature. His patient was 35 years of age and had suffered from diabetes for three years. He had grown slowly worse. In 1915 he had a nasal operation which he stated was a submucous resection of the septum, and an ethmoid operation.

During the early part of December, 1922, he had an attack of influenza which was followed by an attack of acute purulent bilateral ethmoiditis. A few days later the infection extended into the right maxillary antrum and he developed an erythema and induration of the skin of the dorsum of the nose and upper lid of the right eye. The ethmoid infection gradually improved under treatment. Then an ulcer appeared on the right side of the cartilaginous septum. The next day this ulcer was larger, greenish black in color with a very foul discharge. These changes increased until the ulcer perforated the septum, the cartilage and membrane sloughing away in small masses. The perpendicular plate of the ethmoid and vomer began to slough away and the hard palate became perforated establishing a communication between the mouth and the right maxillary antrum. The blood Wassermann reaction was negative. The patient went elsewhere to obtain insulin treatment. Eventually the sloughing ceased and apparently the necrotic areas healed.

New Jersey Medical Society Journal, Orange

21 243 274 (Aug.) 1924

- Palliation in Cancer of Cervix and of Breast E. A. Ill. Newark — p. 243
- Röntgen Ray Therapy in Hemorrhagic Metropathies and Uterine Myomas J. Roemer Paterson — p. 249
- Enforcing the Medical Practice Act G. W. Whiteside New York — p. 254
- Diphtheria I. W. Knight Woodbury — p. 259
- Uncommon Rectal Fistulas H. Goldman — p. 262

New Orleans Medical and Surgical Journal

77 63 106 (Aug.) 1924

- *Reduction of Surgical Mortality W. E. Sistrunk Rochester Minn. — p. 63
- Golden Rule in Medicine W. A. Dearman Long Beach Miss. — p. 69
- Status of Morbidity Reporting in Louisiana O. Dowling New Orleans — p. 73
- *Newer Aspects of Calcium Metabolism L. von Meysenbug New Orleans — p. 77
- External Otitis Cause and Prevention G. E. Adkins Jackson Miss. — p. 80
- *Comparison of Wassermann Reactions Kolmer Original and Bass Johns F. M. Johns and W. E. Jones New Orleans — p. 82
- Injuries and Infections of Hand E. D. Martin New Orleans — p. 85

Reduction of Surgical Mortality—The point especially emphasized by Sistrunk is the fact that the surgeons of the present generation should appreciate the importance of good judgment in the selection of patients for operation the proper preparation of such patients, and the selection of an operation which may be performed without a fatal termination. It is often necessary, in desperate cases to operate in the face of great risk, but it is a great calamity to have death occur if operation has been advised in a patient who is suffering some inconvenience from a disease, but who might live indefinitely if left alone.

Blood Calcium in Purpura, Jaundice, Etc.—In such conditions as hemophilia, idiopathic purpura, jaundice, etc. associated with prolonged coagulation or bleeding time Meysenbug says there is no reduction of the blood calcium hence the administration of calcium in such cases is of no benefit. In short when the calcium level of the blood is normal it is useless to feed calcium with any hope of securing improvement in the condition for which it is given. Tetany, active or latent, some cases of active rickets and the uremia of nephritis comprise the group of conditions known to be associated with reduced blood calcium. Special care must be exercised in the interpretation of results of blood calcium determinations.

Comparison of Tests for Syphilis—The 500 tests reported on by Johns and Jones were conducted by the proposed Kolmer standard, the original and the Bass-Johns methods. Sixty-three or 12.6 per cent were positive with all three methods. The Kolmer standard and the Bass-Johns agreed to the extent of twelve more, making seventy-five, or 15 per cent of positives. Of the twelve specimens found positive by the Kolmer method only, six were from patients who had definite evidences of syphilis as shown by symptoms, history or spinal fluid findings. In one case there was no evidence of syphilis and in five no history was obtained. Of the seven positive only with the Bass-Johns test, five had definite symptoms or history of syphilis, and the history of the other

two was not obtained. From the experience gained in carefully performing almost 1,000 Kolmer tests, the authors believe that the proposed Kolmer standard test gives a larger number of correct positives than former methods, and that the test is very accurate.

New York State Journal of Medicine, New York

24 787 826 (Aug.) 1924

- *Operation in Difficult Hernias, Fascial Transplant and Local Anesthesia M. B. Tinker and H. B. Sutton, Ithaca, N. Y.—p. 787
- *Diagnosis of Bone Tumors J. M. Hitzrot, New York—p. 790
- Improving Hearing in Catarrhal Deafness P. V. Winslow, New York—p. 793
- Psychoanalysis and General Practitioner G. S. Amsden, Albany, N. Y.—p. 797
- *Dry Labor G. L. Brodhead, New York—p. 801

Herniotomy—Reviewing operations for hernias, Tinker and Sutton have arrived at these conclusions. The Bassini operation with its modifications, such as transplanting the rectus muscle or sheath gives a percentage of recurrence far too high particularly in direct hernias, and oblique hernias in old persons. In these cases this procedure should be abandoned. In cases in which the fascial structures at the hernial site are good, the procedure of Andrews or some overlapping method may give better results, but McArthur's autoplasmic sutures laced across the posterior wall of the lower half of the inguinal canal seem best. In bad direct hernias, old oblique hernias, all recurrent hernias and ventral hernias, Gallie's procedure gives the most promise. The routine use of local anesthesia by eliminating postoperative vomiting and retching will undoubtedly reduce the number of recurrences.

Diagnosis of Bone Tumor—Hitzrot says that a proper diagnosis of bone tumor can only be arrived at by a proper consideration of all the evidence gained from the history, clinical examination and roentgen ray examination by consultation with the roentgenologist and pathologist. In many cases this must be supplemented by a pathologic diagnosis made from the tumor itself. Ewing believes that the therapeutic test by radiation should be applied first. Coley, Bloodgood, Codman and others believe that a proper investigation of the tumor plus the examination of the tissue by a group of competent pathologists is a safer procedure. With this latter view Hitzrot agrees, but would make a strong plea for an en bloc removal of the tumor bearing bone in suitable cases both for diagnosis and as a therapeutic measure.

Dry Labor—A review of 182 cases convinces Brodhead that dry labor, in the absence of abnormal conditions, such as contracted pelvis, relatively large child, malpresentation, prolapse of the cord, etc., should be attended by no harmful results either to mother or child. There is no specific treatment for dry labor. Pain should be relieved in every way possible, with morphin, morphin and scopolamin, or nitrous oxid. Should uterine inertia be present with incomplete dilation of the cervix, one can aid to greater advantage by the introduction of a modified De Ribes bag than by any other method.

Northwest Medicine, Seattle

23 337 386 (Aug.) 1924

- Problems of State Association F. A. Pittenger, Boise, Idaho—p. 337
- *Histogenesis and Nature of Arteriosclerosis H. Oertel, Montreal—p. 339
- *Early Recognition of Heart Disorders T. H. Coffen, Portland—p. 342
- Syphilitic Aortitis Complications H. B. Haskell, Seattle—p. 345
- Heart Irregularities R. K. Keene, Spokane, Wash.—p. 349
- *Pericarditis I. B. Bartle, North Bend, Ore.—p. 352
- *Estimation of Glucose in Blood and Urine H. D. Haskins and W. P. Holbrook, Portland—p. 355
- *Posttransfusion Reactions—Comparison of Citrate and Syringe Methods H. H. Kretzler, Seattle—p. 358
- Preservation of Pelvic Floor in Labor R. E. Allen, Seattle—p. 365
- Artificially Enlarged Thymus L. H. Smith, Portland—p. 368

Arteriosclerosis—Oertel defines the arteriosclerotic process as being an expression of adaptation in relations of blood column and current to the arterial wall. It differs from the normal age period changes not fundamentally, but only in exaggerations. Its immediate cause may be found also in abnormally great distention and stretching of the vessel wall, as result of either an inherent hereditary weakness of its tone, or from excessive pressure effects on its elasticity, finally from both.

Prevention of Heart Failure—The object of Coffen's paper is to emphasize the prevention of heart failure by early recognition of heart involvement through early symptoms and signs.

Pericarditis—Bartle is certain that there are more cases of pericarditis that are not diagnosed than those that are diagnosed. He holds that, pericardial inflammations being almost always secondary or collaborative to another condition either near or remote and generally of primary intensity, they are often overlooked and, unless the prime symptoms of pericarditis are present, they go on to an apparent cure unnoticed. The chronic pericardial conditions are more liable to be in conjunction with or following rheumatism or nephritic conditions than those which are a direct extension from the thoracic conditions. Hence a careful inquiry into all of the past history of the patient is essentially necessary to assist in the diagnosis of a chronic pericarditis.

Estimation of Glucose in Blood and Urine—A simplified uniform technique for estimation of glucose in blood and urine is presented by Haskins and Holbrook, using a modification of Shaffer and Hartmann's idiometric titration method of blood sugar. The method eliminates special reagents and special technique for urine sugar. Simultaneous estimations of blood and urine sugar can be made rapidly. A special table is furnished which gives a direct reading of percentage of glucose in either blood or urine corresponding to the cubic centimeters of thiosulphate used for titration, saving time and uncertainty in computation.

Blood Transfusion—Kretzler regards the Lindeman syringe-cannula method as being very much superior to the citrate method of blood transfusion, as far as reactions are concerned. The syringe method is recommended as the method of choice in this operation.

Ohio State Medical Journal, Columbus

20 481 544 (Aug.) 1924

- Evolution of Gynecology T. S. Cullen, Baltimore—p. 484
- Use of Tryparsamide in Neurosyphilis Paresis and Taboparesis S. S. Hindman, Toledo—p. 496
- Therapeutic Abortion Indications and Technique S. J. Goodman, Columbus—p. 503
- Simplified Gullstrand Diaphragm Ophthalmic Lamp in Clinical Practice C. King, Cincinnati—p. 505
- Epidemiologic Study of Scarlet Fever Occurring in School Children F. M. Houghtaling, Sandusky—p. 514
- Case Showing Unusual Specific Gravity S. C. Lind, Cleveland—p. 516

Tryparsamide in Neurosyphilis—Hindman has found tryparsamide the most efficient remedy that has yet been offered for early paresis and other forms of neurosyphilis. He reports nine cases. In order to obtain effective results the spinal fluid must be examined frequently in every syphilitic patient and the first lumbar puncture should be made on the least suspicion of mental or nervous changes. Tryparsamide is contraindicated in cases in which retinal changes have taken place and the eye must be watched carefully during its use. Recent reports indicate that this danger will be eliminated. In Hindman's opinion, those cases which have been treated intensively with other arsenicals do not respond very well to tryparsamide. Therefore any patient in the course of treatment for other forms than neurosyphilis, should be placed on tryparsamide on the first evidence of nervous involvement.

High Urine Specific Gravity—Lind reports a case in which a urine specimen showed a specific gravity of 10.63. The patient was a woman aged 25, who was seen eighteen hours after the onset of an attack of acute appendicitis. During the past year she had had attacks of pain in the abdomen, the last one of which was diagnosed ptomaine poisoning. Operation consisted of ordinary appendectomy through a right rectus incision, a greatly inflamed retrocecal appendix being removed. The preoperative urine had a specific gravity of 10.06 with neither albumin nor sugar. Microscopic examination showed no casts, no blood, and a few pus cells. The next day the urine was reported as containing acetone in large quantity and 1 per cent sugar. The patient was immediately given glucose and insulin, and urine specimens were saved. Of these seven or eight urine specimens one showed

the specific gravity of 10.63, while the others ran from 10.28 to 10.32. This particular specimen contained 16 per cent sugar, gave a markedly positive acetone test and the blood sugar was increased to 0.25. Nothing out of the ordinary was discovered. Convalescence progressed without interruption.

Oklahoma State Medical Association Journal, Muskogee

17 191 213 (Aug.) 1924

- Symptoms of Cancer of Uterus J S Hartford Oklahoma City—p 191
Pelvic Cancer Exclusive of Cancer of Female Organs L Long Oklahoma City—p 193
Surgical Treatment of Cancer of Uterus L M Sackett Oklahoma City—p 196
Radium Treatment of Cancer of Uterine Cervix C O Donaldson and G E Knappenberger Kansas City Mo—p 198
Roentgen Ray Therapy of Carcinoma of Uterus R H Milwee Dallas Tex—p 201
Medical Reserve Corps in Oklahoma L S Willour McAlester—p 204

Philippine Journal of Science, Manila

24 509 638 (May) 1924

- New Malayan Species of *Othius* Stal F Muir—p 509
Little Known Crane Flies from Northern Japan C P Alexander—p 531
*Sacrococcygeal Teratoma in Filipino Infant L W Smith—p 613
Chaulmoogra Ethyl Propyl Butyl and Amyl Esters G A Perkins—p 621

Sacrococcygeal Teratoma—In a search of the records of 9800 necropsies covering a period of slightly over fifteen years, from the Philippine General Hospital, the San Lazaro Public Health Service Hospital and the Manila City Morgue, Smith found only one other case of true teratoma recorded. In spite of a large sacrococcygeal tumor, labor in the case reported by Smith was normal. On the fourth day after birth gangrene of a portion of the tumor was noted and operation was decided on as the only possible means of saving the baby's life. During the day, however, cyanosis developed with coldness of the extremities, and "stiffness" of the muscles. The baby died ninety-two hours after birth. The tumor was covered by a delicate "downy" growth of short hair, only 1 or 2 mm in length. It was composed of a great variety of tissues, many of which were recognizable to the naked eye. Most prominent was the bony and cartilaginous development which gives a rough framework or stroma for the other structures. It bore no resemblance to any normal fetal bones. In the interstices there were numerous cysts, lined in some instances by a smooth shiny epithelium in others by a shaggy, soft, friable hemorrhagic tissue not unlike mucous polyp. Again, islands of nervous tissue were seen, bearing no apparent relationship to the other tissues, some of the latter areas were also cystic in character, suggesting the ventricles of the brain, and were lined by a smooth, thin tissue. Large masses of unrelated striated muscle were definitely recognizable grossly, but apparently were without function. Fatty tissue embedded in the meshes of a loose grayish trabeculated stroma, reminiscent of areolar connective tissue, was also prominent. No definite abortive attempts to form fetal organs were found and the whole gross appearance is that of a variety of tissues, struggling madly to outgrow one another, the whole maintained in a semblance of order by a covering of skin, which even in places has become overpowered by the purposeless proliferation of the other tissues with resultant necrosis. The tumor was a true teratoma, a parasite, developing as a monogerminal tissue implantation, a misplacement or separation of tissues within a single individual—the so called autochthonous teratoma, and not a bigerminal implantation or abnormal twin pregnancy.

Experiments with Chaulmoogra Oil—Experiments on the preparation of chaulmoogra ethyl, propyl butyl and amyl esters are described by Perkins in which the course of the reaction between chaulmoogra oil and the alcohol was followed by means of a refractometer. The proportion of two mols of the alcohol to one molecular equivalent of chaulmoogra oil was found to be sufficient for a practical conversion of the oil into the desired ester, using sulphuric acid (0.03 mol) as catalyst. Hydrochloric acid (0.03 mol) was found less desirable as a catalyst because it caused a different

equilibrium value, presumably through different distribution in the two liquid phases. Practical equilibrium was found to be obtainable by boiling for a few hours, using dehydrated alcohols. The water in 95 per cent ethyl alcohol was found to emphasize the separation of the reaction mixture into two layers, which disadvantage can be overcome by increasing the amounts of alcohol and acid and the time of boiling. Methods used at present for the preparation of chaulmoogra ethyl, propyl, butyl and amyl esters are described and characteristics of these products given. A method is described for combining the ethyl esters with iodine in such a way as to diminish materially the irritating properties of this drug.

Radiology, St Paul

3 91 182 (Aug.) 1924

- *Thoracic Stomach Differentiation from Evagination and Hernia of Diaphragm L T LeWald New York—p 91
Roentgen Ray in Diagnosis and Treatment of Diseases of Esophagus P P Vinson Rochester Minn—p 105
Interpretation of Early Fetal Roentgenograms I F Stein and R A Arens Chicago—p 110
Standardization of Absorptive Powers of Roentgen Rays by Salts of Various Metals L J Menville New Orleans—p 118
*Cirrhosis of Lung L R Sante St Louis—p 128
Nasal Accessory Sinuses in Infants and Children B Allen Iowa City Ia—p 136
Factors in Application of Radium W H Cameron Pittsburgh—p 140
Calibration of Roentgen Ray Machines R Kegerreis Rochester Minn—p 141
Madelung's Deformity Two Cases L Levyn Buffalo—p 145
Radiographic Technique for Chests E B Knerr Kansas City Mo—p 149
Pulmonary Fibrosis K S Davis Rochester Minn—p 150
Roentgen Ray Treatment Unit E W Rowe Lincoln Neb—p 158
Check Fractures F E Diemer Portland Ore—p 160
Case of Myxoma of Lung C G Sutherland Rochester Minn—p 161
Top for Testing Timing Devices E G C Williams Danville, Ill—p 161
Roentgen Ray Film Clip J D Camp Rochester Minn—p 163
Roentgenologic Diagnosis of Pathologic Conditions of Jaw G B New Rochester Minn—p 165

Thoracic Stomach—LeWald describes thoracic stomach as an entity of congenital origin with development of the diaphragm below it, without structural defect. A thoracic stomach remains at all times above the diaphragm. In hernia of the diaphragm the stomach may be found, at times, below the diaphragm. In thoracic stomach the short esophagus enters the stomach above the diaphragm. The duodenum passes through the opening in the diaphragm usually occupied by the esophagus. The condition of thoracic stomach is not incompatible with longevity. In evagination, the diaphragm can always be made out above the stomach, especially in lateral exposures.

Cirrhosis of Lung—Nine cases of fibrosis of the lung are reported by Sante. Nearly all of these cases followed one of two causes, being either pulmonary in origin, following lobar or bronchopneumonia, or their complications or having origin from a plastic fibrinous pleurisy. In no instance was the process observed as a primary lesion without evidence of previous infection. The term suggested for this condition is 'chronic diffuse interstitial fibrosis of the lung'.

Rhode Island Medical Journal, Providence

7 113 130 (Aug.) 1924

- Prenatal Care P Appleton, Providence—p 115

Southern Medical Journal, Birmingham, Ala

17 549 638 (Aug.) 1924

- *Pancreatic Enzymes in Fasting Duodenal Contents D N Silverman and W Denis New Orleans—p 549
*Bacteriology of Diarrhea in Infants W C Davison Baltimore—p 552
Exciting and Predisposing Causes of Diarrhea O H Wilson, Nashville Tenn—p 560
Treatment of Diarrhea N C Womack Jackson Miss—p 562
*Bacteriophage in Treatment of Bacillary Dysentery R C Spence and E B McKinley Dallas Tex—p 563
*Case of Tularemia E G Martin Benoit Miss—p 572
Difficulties from Administrative Standpoint in Control of Malaria S W Welch Montgomery Ala—p 573
Effect of Variation of Level of Impounded Water on Control of Anopheles Production H R Carter Washington D C—p 575
Malaria Control in United States L D Fricks Memphis Tenn—p 578
Seasonal Incidence of Types of Malaria Parasites in Southern United States M A Barber and B Mayne Crowley La—p 583
Spleen Index in Malaria S T Darling New York—p 590
Anopheles Infection Under Natural Conditions W V King Mound La—p 596

- ***Periarterial Sympathectomy** J F Mitchell Washington D C—p 609
 ***Fracture of Neck of Femur** E D Martin New Orleans—p 613
 Patella with Reference to Acute Fracture H S Black Spartanburg S C—p 617
 ***Fractures of Larynx** T E Oertel Augusta Ga—p 619
 Roentgen Ray Diagnosis in Urology R H Lafferty and C C Phillips Charlotte N C—p 623
 Removal of Intra Ocular Foreign Bodies N M Heggie Jacksonville Fla—p 627

Pancreatic Enzymes in Fasting Duodenal Contents—In summarizing their investigations Silverman and Demis arrive at the following conclusions Normal men give (a) minimum enzyme activity of lipase 0.8 cc amylase 13 mg, protease 13 mg (b) maximum enzyme activity of lipase 2 cc, amylase 26 mg protease 29 mg patients with chronic biliary tract disease give (a) minimum enzyme activity of lipase 0.0 cc amylase 1 mg protease 11 mg (b) maximum enzyme activity of lipase 0.6 cc amylase 25 mg protease 35 mg patients with chronic pancreatic disease give (a) minimum enzyme activity of lipase 0.1 cc amylase 0.0 mg, protease 0.2 mg (b) maximum enzyme activity of lipase 0.8 cc, amylase 18 mg protease 16 mg.

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 Nature of Articular Cartilage and Method of Repair L K Ito—p 33
 External Duodenal Fistula Four Cases H M Rich—p 43
 Dislocation of Hip in Childhood Relation of Trauma to Pseudocoxitis C C Grace—p 52
 Excision of Femoral Hernial Sac J I Buckley—p 60
 Hysterectomy in Surgery of Chest A T Edward—p 69
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 Excision of Humerus and Femoral Shaft A K Henry—p 84
 Congenital Aneurysm of Iliac Artery J S B Stanford—p 92
 Mesenteric Cyst Two Cases T T Higgins and E I Lloyd—p 99
 Attempted Introduction of Ascending Renal Infection in Rabbits S C Dole and B C Mayhew—p 106
 Retroperitoneal Cysts R M Handfield Jones—p 119
 Action of Radiations on Living Tissues C P C Wakeley—p 130
 Surgical Treatment of Osteoarthritis C M Page—p 152
 Intravascular of Urine Urethral Abscess H Pailley and G P B Hudik—p 181
 Median Extraperitoneal Route to Ureter K W Monsarrat—p 191
 Calculi in Pelvis of Female Kidney H Reid—p 198
 Abnormal First Rib Forming Supraclavicular Tumor C H Whiteford—p 200
 Acute Cholelithiasis in Child W E Tanner—p 200

Roentgenography of Renal Calculi—The opacity of a calculus is determined by (1) the nature of its constituents, (2) its structure (3) its thickness. White asserts that calcium oxalate and calcium phosphate give very good shadows. They are very common constituents of urinary calculi. The high relative opacity is due to the high atomic weight of the calcium present in these salts. All the other common urinary salts give relatively poor shadows. They include the urates, uric acid and triple phosphate. Cystine and xanthine also give poor shadows in the pure state but of slightly more opacity than the foregoing owing to the sulphur they contain. It is rare for any of the foregoing substances to be the sole constituent of a stone. This applies to cystine as well as the more common varieties. There is frequently calcium oxalate or phosphate present. The figures of different observers giving the relative incidence of different salts in calculi have frequently been conflicting. Recent observers however are agreed on the preponderance of calcium oxalate in renal and ureteric stones and of uric acid and urates in bladder stones. Phosphate is found in larger proportions as a constituent of bladder stone than of renal stone. It frequently surrounds a nucleus of oxalate or uric acid or urate. Stones of uric acid or urate in the kidney or ureter soon become mixed with calcium salts, after which they can be identified by radiogram. Exploratory operation for stone is rarely justified when a radiogram is negative. Roentgenograms sometimes fail to demonstrate vesical calculi consisting largely of uric acid or ammonium urate. Where possible, cystoscopy should always be carried out for this reason.

Muscle Transplantation for Abdominal Hernia—In a case of abdominal hernia, with an opening 5 inches in diameter,

Mackenzie closed the defect by freeing the tensor fasciae femoris at its lower end and swinging the muscle forward and upward for a third of a circle. The result was wholly satisfactory. Mackenzie suggests that this method can be used for the most advanced types of inguinal hernia, and for certain large postoperative hernias in the midline below the umbilicus, in which the whole lower abdominal wall could be braced up by the use of the tensor muscle of each side.

Repair of Articular Cartilage—The repair of articular cartilage in experimental work. It describes as follows: The gap at first becomes filled with granulation tissue, which becomes fibrous then fibrocartilaginous, then cartilaginous. The time required for the formation of the cartilage varies from weeks to months. In some specimens it appears that the reparative tissue has come from the underlying cancellous tissue, in others transitional cartilage-like tissue seems to arise in connection with the edges of synovial membrane, if the injury to the articular cartilage has approached them.

External Duodenal Fistula—Rigby has seen four cases of this condition in twenty years and has reviewed the records of three other hitherto unpublished cases. They followed operation on the duodenum for perforated ulcer, acute diverticulitis and traumatic rupture, operation on the stomach, operation on the kidney and operation for appendix abscess.

Dislocation of Hip—Choyce analyzes the fifty-nine cases published up to January, 1924. The varieties of dislocation were: iliac (dorsal), 40; obturator, 7; sciatic, 6; suprapubic, 3; and not stated, 3. Manipulation, usually under anesthesia, was successful in all cases in which it was tried within fourteen days from the date of the dislocation. Various operative measures were adopted. The most satisfactory route of access appears to have been by subperiosteal detachment of muscles from the great trochanter, or by detachment and subsequent fixation of the trochanter. In some cases operative clearance of the acetabulum and reposition of the femoral head was successful, in others resection of the femoral head was adopted.

Etiology of Femoral Hernia Sac—Buckley is of the opinion that the sac of a femoral hernia is a preformed sac, and this is not formed contemporaneously with the expulsion of the viscus. The sac is required as a result of preperitoneal fat being herniated into the thigh through that naturally weak site in man, the crural ring, and this hernia of preperitoneal fat drags with it a small peritoneal sac. Anatomically a man is as much liable to a femoral hernia as a woman. The greater frequency of the condition in women is due to pregnancy and to the prolonged period of raised intra-abdominal pressure which that condition produces. No existing theory as to the etiology of femoral hernia accounts for the fact that among the comparatively few cases which occur below the age of 15 years, females have a two to one majority, but this fact serves to throw doubt on the embryonic theory, in that normal physiologic results suggest that the gubernaculum is a more active structure in the male than in the female.

Gangrene After Ligation of Popliteal Artery—To provide a collateral circulation after ligation of the popliteal artery, three anastomoses in succession must really be opened up and in view of this it appears less surprising that injuries to the popliteal artery are so commonly succeeded by gangrene. In fact, when the small size of the normal recurrent tibial arteries is also recalled, and the frequent irregularity of the posterior one remembered, it seems more surprising that sufficient blood to maintain the life of the tissues ever reaches the foot after ligation of the lower part of the popliteal artery. After ligation of the superficial femoral or popliteal above the level of the origin of the superior articular branches, only one set of anastomotic communications have to be opened up, since the blood can reach the popliteal through the main stems of the superior articular branches and pass by normal channels to the leg and foot. In injuries to the popliteal artery, the situation of the wound considerably influences the occurrence of gangrene. The occurrence of gangrene is only as frequent after obstruction of the upper third of the popliteal artery as after obstruction of the superficial femoral, but if the course from the articular branches through the popliteal

to the anterior and posterior tibial arteries is impeded, the risk of gangrene is very markedly increased.

Mesenteric Cysts—The first of the two patients whose cases are reported by Higgins and Lloyd had a typical though large mesenteric cyst. In the second case the cyst was near the upper pole of the right kidney, though it was not attached either to the kidney or to the suprarenal, its macroscopic and microscopic characters were identical with those of a mesenteric cyst. The authors suggest that this also was an example of so-called mesenteric cyst and that it arose from remains of the Wolffian body, and hence came to occupy a situation in close relation to the kidney. If it is admitted that this cyst, which bears such a close resemblance to the mesenteric cysts arose in this way, then it seems to lend additional support to Dowd's explanation of the origin of mesenteric cysts.

Experimental Ascending Renal Infection—A series of experiments is reported on by Dyke and Maybury designed if possible to bring about an "ascending" infection of the kidney, using the term "ascending" in the sense of an infection passing into the kidney via the lumina of the urinary passages. Attempts directed to bring about infection of the ureter from the bladder showed that the ureterovesical junction offered under the experimental conditions, an insuperable bar to the passage of infection from the bladder upward. By direct infection of the lumen of the ureter it was found to be possible to bring about a subsequent infection of the kidney, but this infection was due, not to regurgitation of the infected pelvic contents into the renal tubules, but to direct spread through the epithelium of the renal sinus into the interstitial substance of the kidney, and under certain conditions, into the space between the kidney and its true capsule. Carmine injected into the pelvis did not pass through the renal papilla, which appeared to offer an impassable barrier to a reversal of the urinary flow. No evidence could be obtained of the possibility of the occurrence of an "ascending" renal infection.

Classification of Retroperitoneal Cysts—A classification of retroperitoneal cysts on an embryologico-anatomic basis is made by Handfield-Jones. Cysts of urogenital origin, of mesodermal origin, those arising in cell inclusions—teratomatous cysts, lymphatic cysts, traumatic blood cysts, parasitic cysts, and cysts of developmental origin in fully formed organs.

Median Extraperitoneal Approach to Ureter—Monsarrat advocates making a median suprapubic incision down to the peritoneum, followed by extraperitoneal exposure of the ureter by peritoneal displacement.

British Medical Journal, London

2 137 162 (July 26) 1924

- Yesterday Today and Tomorrow J B Hall—p 137
Method of Tissue Culture Bearing on Pathologic Problems A Carrel—p 140
Tooth Plate Removed from Bronchus by Inferior Bronchoscopy E B Waggett and E L Fyffe—p 145
*Case of Bilateral Renal Calculus H T Mursell—p 146
Fibrosis of Lungs Due to Inhalation of Asbestos Dust W E Cooke—p 147
Lymphosarcoma of Tonsil Removed by Sluder's Guillotine Enucleation F P Sturm—p 148

Bilateral Renal Calculus—Mursell cites the case of a man who, while diving, sustained a dislocation between his third and fourth cervical vertebrae. He had a complete paralysis involving all the nerve area below the level of the injury. Breathing was solely diaphragmatic. There were paralysis of bladder and rectum and extensive bedsores over the sacrum. There was dribbling of urine and severe cystitis. The superior articular processes of the fourth cervical vertebra were removed and dislocation reduced. A stout silver wire was passed through the spinous processes of the third and fourth cervical vertebrae and tightly twisted up. The wound was closed and the head and neck immobilized. Complete recovery slowly took place, and three months later the patient was about. He subsequently served in German East Africa and also with a unit in Europe. He was seen again eight years later on account of pus and blood in the urine and a certain degree of lumbar pain, but there was no history of true renal colic. A skiagram showed large masses of calculi

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 Abnormal First Rib Forming Supraclavicular Tumor C. H. Whiteford—p. 200
 Acute Colic Intussusception in Child W. E. Tanner—p. 200

Roentgenography of Renal Calculi—The opacity of a calculus is determined by (1) the nature of its constituents, (2) its structure, (3) its thickness. White asserts that calcium oxalate and calcium phosphate give very good shadows. They are very common constituents of urinary calculi. The high relative opacity is due to the high atomic weight of the calcium present in these salts. All the other common urinary salts give relatively poor shadows. They include the urates, uric acid and triple phosphate. Cystine and xanthine also give poor shadows in the pure state, but of slightly more opacity than the foregoing owing to the sulphur they contain. It is rare for any of the foregoing substances to be the sole constituent of a stone. This applies to cystine as well as the more common varieties. There is frequently calcium oxalate or phosphate present. The figures of different observers giving the relative incidence of different salts in calculi have frequently been conflicting. Recent observers, however, are agreed on the preponderance of calcium oxalate in renal and ureteric stones and of uric acid and urates in bladder stones. Phosphate is found in larger proportions as a constituent of bladder stone than of renal stone. It frequently surrounds a nucleus of oxalate, or uric acid or urate. Stones of uric acid or urate in the kidney or ureter soon become mixed with calcium salts, after which they can be identified by radiogram. Exploratory operation for stone is rarely justified when a radiogram is negative. Roentgenograms sometimes fail to demonstrate vesical calculi consisting largely of uric acid or ammonium urate. Where possible, cystoscopy should always be carried out for this reason.

Muscle Transplantation for Abdominal Hernia—In a case of abdominal hernia, with an opening 5 inches in diameter,

Mackenzie closed the defect by freeing the tensor fasciae femoris at its lower end and swinging the muscle forward and upward for a third of a circle. The result was wholly satisfactory. Mackenzie suggests that this method can be used for the most advanced types of inguinal hernia, and for certain large postoperative hernias in the midline below the umbilicus, in which the whole lower abdominal wall could be braced up by the use of the tensor muscle of each side.

Repair of Articular Cartilage—The repair of articular cartilage in experimental work. It describes as follows: The gap at first becomes filled with granulation tissue which becomes fibrous then fibrocartilaginous, then cartilaginous. The time required for the formation of the cartilage varies from weeks to months. In some specimens it appears that the reparative tissue has come from the underlying cancellous tissue, in others transitional cartilage-like tissue seems to arise in connection with the edges of synovial membrane, if the injury to the articular cartilage has approached them.

External Duodenal Fistula—Rigby has seen four cases of this condition in twenty years and has reviewed the records of three other hitherto unpublished cases. They followed operation on the duodenum for perforated ulcer, acute diverticulitis and traumatic rupture, operation on the stomach, operation on the kidney and operation for appendix abscess.

Dislocation of Hip—Choyce analyzes the fifty-nine cases published up to January, 1924. The varieties of dislocation were iliac (dorsal), 40, obturator 7, sciatic, 6, suprapubic, 3, and not stated, 3. Manipulation, usually under anesthesia, was successful in all cases in which it was tried within fourteen days from the date of the dislocation. Various operative measures were adopted. The most satisfactory route of access appears to have been by subperiosteal detachment of muscles from the great trochanter, or by detachment and subsequent fixation of the trochanter. In some cases operative clearance of the acetabulum and reposition of the femoral head was successful, in others resection of the femoral head was adopted.

Etiology of Femoral Hernia Sac—Buckley is of the opinion that the sac of a femoral hernia is a preformed sac, and this is not formed contemporaneously with the expulsion of the viscus. The sac is acquired as a result of preperitoneal fat being herniated into the thigh through that naturally weak site in man, the crural ring and this hernia of preperitoneal fat drags with it a small peritoneal sac. Anatomically a man is as much liable to a femoral hernia as a woman. The greater frequency of the condition in women is due to pregnancy and to the prolonged period of raised intra-abdominal pressure which that condition produces. No existing theory as to the etiology of femoral hernia accounts for the fact that among the comparatively few cases which occur below the age of 15 years, females have a two to one majority, but this fact serves to throw doubt on the embryonic theory, in that normal physiologic results suggest that the gubernaculum is a more active structure in the male than in the female.

Gangrene After Ligation of Popliteal Artery—To provide a collateral circulation after ligation of the popliteal artery, three anastomoses in succession must really be opened up, and in view of this it appears less surprising that injuries to the popliteal artery are so commonly succeeded by gangrene. In fact, when the small size of the normal recurrent tibial arteries is also recalled, and the frequent irregularity of the posterior one remembered, it seems more surprising that sufficient blood to maintain the life of the tissues ever reaches the foot after ligation of the lower part of the popliteal artery. After ligation of the superficial femoral or popliteal above the level of the origin of the superior articular branches only one set of anastomotic communications have to be opened up, since the blood can reach the popliteal through the main stems of the superior articular branches and pass by normal channels to the leg and foot. In injuries to the popliteal artery, the situation of the wound considerably influences the occurrence of gangrene. The occurrence of gangrene is only as frequent after obstruction of the upper third of the popliteal artery as after obstruction of the superficial femoral, but if the course from the articular branches through the popliteal

to the anterior and posterior tibial arteries is impeded, the risk of gangrene is very markedly increased.

Mesenteric Cysts—The first of the two patients whose cases are reported by Higgins and Lloyd had a typical though large mesenteric cyst. In the second case the cyst was near the upper pole of the right kidney, though it was not attached either to the kidney or to the suprarenal. Its macroscopic and microscopic characters were identical with those of a mesenteric cyst. The authors suggest that this also was an example of so-called mesenteric cyst, and that it arose from remains of the Wolffian body, and hence came to occupy a situation in close relation to the kidney. If it is admitted that this cyst, which bears such a close resemblance to the mesenteric cysts arose in this way then it seems to lend additional support to Dowd's explanation of the origin of mesenteric cysts.

Experimental Ascending Renal Infection—A series of experiments is reported on by Dyke and Maybury, designed, if possible to bring about an "ascending infection of the kidney, using the term 'ascending' in the sense of an infection passing into the kidney via the lumina of the urinary passages. Attempts directed to bring about infection of the ureter from the bladder showed that the ureterovesical junction offered under the experimental conditions, an insuperable bar to the passage of infection from the bladder upward. By direct infection of the lumen of the ureter it was found to be possible to bring about a subsequent infection of the kidney, but this infection was due not to regurgitation of the infected pelvic contents into the renal tubules but to direct spread through the epithelium of the renal sinus into the interstitial substance of the kidney, and under certain conditions into the space between the kidney and its true capsule. Carmine injected into the pelvis did not pass through the renal papilla which appeared to offer an impassable barrier to a reversal of the urinary flow. No evidence could be obtained of the possibility of the occurrence of an "ascending" renal infection.

Classification of Retroperitoneal Cysts—A classification of retroperitoneal cysts on an embryologico-anatomic basis is made by Handfield-Jones. Cysts of urogenital origin of mesocolic origin, those arising in cell inclusions—teratomatous cysts, lymphatic cysts, traumatic blood cysts, parasitic cysts, and cysts of developmental origin in fully formed organs.

Median Extraperitoneal Approach to Ureter—Monsarrat advocates making a median suprapubic incision down to the peritoneum, followed by extraperitoneal exposure of the ureter by peritoneal displacement.

British Medical Journal, London

2 137 162 (July 26) 1924

Yesterday Today and Tomorrow J B Hall—p 137

Method of Tissue Culture Bearing on Pathologic Problems A Carrel—p 140

Tooth Plate Removed from Bronchus by Inferior Bronchoscopy E B Waggett and E L Fyfe—p 145

*Case of Bilateral Renal Calculus H T Mursell—p 146

Fibrosis of Lungs Due to Inhalation of Asbestos Dust W E Cooke—p 147

Lymphosarcoma of Tonsil Removed by Sluder's Guillotine Enucleation F P Sturm—p 148

Bilateral Renal Calculus—Mursell cites the case of a man who, while diving, sustained a dislocation between his third and fourth cervical vertebrae. He had a complete paralysis involving all the nerve area below the level of the injury. Breathing was solely diaphragmatic. There were paralysis of bladder and rectum and extensive bedsores over the sacrum. There was dribbling of urine and severe cystitis. The superior articular processes of the fourth cervical vertebra were removed and dislocation reduced. A stout silver wire was passed through the spinous processes of the third and fourth cervical vertebrae and tightly twisted up. The wound was closed and the head and neck immobilized. Complete recovery slowly took place and three months later the patient was about. He subsequently served in German East Africa and also with a unit in Europe. He was seen again eight years later on account of pus and blood in the urine and a certain degree of lumbar pain, but there was no history of true renal colic. A skiagram showed large masses of calculi

in both renal areas. The left kidney being judged the better of the two, nephrolithotomy was done on that side through an oblique lumbar incision, and masses of branched phosphatic calculi were removed through a cortical incision into the kidney through pouched and thinned-out tissue, opening into the calyces which contained the calculi. The upper third of the kidney was chiefly involved and the remainder showed sound secreting tissue. The patient made an uneventful recovery from this operation. Two months later masses of phosphatic calculi were removed from the right kidney. This left a big flabby upper sac leading to the calyces which had contained the calculi. As the walls of this sac showed no evidence of secreting tissue, and as it seemed only too probable this portion of the kidney would never heal, and only leave a persistent fistula, the sac was completely resected longitudinally. Except for an attack of malaria and dysentery, from which the patient had previously suffered, no untoward event marred his recovery.

Calcutta Medical Journal

19 731 772 (May) 1924

- Epidemic Dropsy at Atrassia Village S L Sarkar and S K Banerji —p 731
Gunshot Wounds S K Ray—p 737
Analysis of Fifty Kala Azar Cases I Basu—p 745
Lesions Caused by Round Worms D N Banerjee—p 752

Edinburgh Medical Journal

31 373 412 (July) 1924

- *Congenital Distal Dislocation of Ulna D M Greig—p 373
Sacro-Iliac Strains M F Forrester Brown—p 392
Diagnosis of Nonopaque Foreign Bodies in Lung R P Mathers—p 399
*Interarticular Dislocation of Patella K P Brown—p 403

Congenital Distal Dislocation of Ulna—Greig asserts that this condition is congenital, that the primary factor is dislocation of the distal extremity of the ulna, and that all the other features are inevitable consequences of this displacement. One case is cited.

Interarticular Dislocation of Patella—"Interarticular dislocation of the patella" is the name suggested by Brown for the displacement in which the patella becomes wedged between the articular surfaces of the femur and the tibia, with or without rupture of the quadriceps attachment. Interarticular dislocation may be further subdivided, according to whether the upper or lower border of the patella is caught. The condition is rare, only ten cases are found in the literature.

Glasgow Medical Journal

102 180 (July) 1924

- Tumors of Breast Mastitis and Precancerous Changes J C Mac Donald—p 1
Flattening of Inner Canthus After Extirpation of Lacrymal Sac T S Barrie—p 36
Case of Complete Lateral Sinus Thrombosis Without Signs J K Love—p 39

Journal of Laryngology and Otology, Edinburgh

39 365-428 (July) 1924

- Suppurative Disease of Upper Nasal Sinuses E M Woodman—p 365
Relation of Visual Disturbances with Affections of Nasal Cavities and Posterior Group of Sinuses A L Turner—p 371
Sphenoidal Sinus in Relation to Optic Nerve W S Syme—p 375
Retrolbulbar Neuritis of Sphenoidal Sinus Origin G Young—p 381
Visual Changes in Optic Nerve Disease H M Traquair—p 384
Frequency of Sphenoidal Sinus Operations J S Fraser—p 393
Ocular Disturbance Attributed to Nasal Disease Improvement After Intranasal Operative Measures J Dundas Grant—p 397
Pathology of Inflammation of Sphenoidal Air Sinus F E Reynolds—p 399
Osteomyelitis of Frontal Bone Operation Recovery W Miligan—p 401

Journal of Obstetrics and Gynecology of British Empire, Manchester

31 165 368 (Summer) 1924

- Implantation of Human Ovum and Early Development of Trophoblast J H Teacher—p 166
Obstetric Teaching V B Green Armytage—p 218
Presacral Tumors of Congenital Origin Case A Galletly—p 226
*Adenomyoma of Uterus with Tuberculous Infection R W Johnstone—p 243
*Etiology and Prognosis of Puerperal Insanity A W Bourne—p 251

- *Bacteria of Vagina in Pregnancy C L Houlton—p 258
Anesthesia for Gynecology and Obstetrics H E G Boyle and C L Hewer—p 264
Lethargic Encephalitis Occurring in Pregnancy Two Cases Complicated by Albuminuria S B Herd—p 267
Case of Salpingoceleal Fistula with Partial Prolapse of Fallopian Tube Into Cecum M H Phillips—p 272
Fetus Peromelus W B Bell—p 274
*Prolonged Retention of Hydatidiform Mole in Uterus W B Bell—p 276
*Hydatidiform Mole Associated with Amenorrhea for Nine Months J St G Wilson—p 278
Cervical Dilator D Dougal—p 280
Case of Uterus Duplex with Adenomyoma L H Williams—p 286
Case of Combined Carcinoma and Tuberculosis of Uterus G I Strachan—p 289

Adenomyoma of Uterus with Tuberculous Infection—In Johnstone's case the uterus presented simultaneously (1) two diffuse adenomyomatous tumors in its posterior wall, clearly of endometrial origin, and (2) disseminated tuberculous infection, alike of the endometrium, the muscular wall, the tumor growths and certainly the left tube—possibly also the right. The origin of the tuberculous infection was in all likelihood blood borne, secondary to some old standing tuberculous focus in the lungs. The infection settled more in the endometrium of the body of the uterus than in the tubes. From the endometrium it seems to have passed into the wall of the uterus, and judging from the much greater prevalence of the tubercles in the cellular mantle around the gland elements of the tumor, is compared either with the endometrium or with those portions of the wall of the uterus not affected by the tumor, it seems legitimate to argue that the glandular prolongations into the adenomyoma have provided the tuberculous disease with a ready access to the tumor and have indeed proved to be areas of a diminished resistance which has determined the settlement of tubercle bacilli in them.

Etiology of Puerperal Insanity—Sixty-one cases of puerperal insanity were analyzed by Bourne. Uterine infection, with or without blood infection, accounted for eighteen, 27 per cent and of these eighteen, thirteen were serious, some of them proving fatal. Of the sixty-one confinements there were nine cases of eclampsia, or 13.5 per cent. There were eight cases of difficult labor with various conditions, including severe hemorrhage manual dilatation of the cervix and extraction with the forceps. As to the influence of an unstable mental equilibrium and a bad family history, there were eighteen cases. Thus of all the cases more than one quarter gave signs of a predisposition to mental disease. Four of the eighteen patients were epileptic. In four there was a history of previous sojourns in an asylum while five had suffered puerperal insanity after previous confinements, and five came of a stock in which insanity had appeared in former years.

Bacteria of Vagina in Pregnancy—Houlton found that in the vaginal secretion of the majority of pregnant women *Bacillus vaginalis*, accompanied in some cases by the yeast fungus, is the only organism present, but, in a minority of cases, in which the secretion is described as pathologic other organisms are present. The pathogenicity of these organisms is not proved, but they must be regarded as "suspect." In cases in which pregnant women are found to have a pathologic looking vaginal secretion a full bacteriologic examination should be made, and if gram-positive cocci are found it is suggested that an autogenous vaccine should be prepared and given during the last weeks of pregnancy, as a prophylactic against puerperal infection.

Prolonged Retention of Hydatidiform Mole in Uterus—In Bell's case a mole in which hydatidiform degeneration of the villi was present had been retained in the uterus for ten months after it ceased to develop owing to "hemorrhages" in the chorionic decidua space. These 'hemorrhages' produce in connection with the hydatidiform mole a condition similar to that seen in the ordinary blood mole.

Hydatidiform Mole Associated with Amenorrhea—On bisection of the specimen from Wilson's case an amniotic cavity was disclosed in the interior of the mole, containing a fetus 12 mm in length attached to the wall of the cavity by the umbilical cord on which was a small cyst.

Journal of State Medicine, London

32 301 350 (July) 1924

Proceedings of Borderline Meeting of Royal Institute of Public Health
Burnham—p 303**Journal of Tropical Medicine and Hygiene, London**

27 199 210 (July 15) 1924

*Yellow Fever in Africa W H Hoffmann—p 199

Lime Salts in Kidney in Yellow Fever—In nearly all of thirty cases of yellow fever, Hoffmann found lime salts in the kidney in the contorted tubules and in Henle's loops. He regards this finding as being a simple and reliable anatomic method for the diagnosis of yellow fever, perhaps superior to all others because it does not occur in similar diseases. He recommends, in lethal cases, to make the examination for lime crystals in the kidney in sections stained with hematoxylin.

Medical Journal of South Africa, Johannesburg

19 347 376 (June) 1924

*Case of Anthrax Meningitis J H H Pirie—p 348
Plague D C Rees and J A Mitchell—p 350
Guanicol Chlorid as Internal Antiseptic J Moberly—p 355
Law and Doctor in South Africa III H De Villiers—p 357.

Anthrax Meningitis—Pirie's patient was ill only three days with a feverish condition which had been regarded as influenza but no great importance had been attached to the illness until he was found unconscious, with stertorous breathing and a definite rigidity of the right side of the body. There was no rise of temperature. A small septic sore was observed on the chin, and the information was volunteered that he had cut himself shaving some three or four days previously. The appearance of the sore was not in the least suggestive of an anthrax pustule and no suspicion of anthrax was entertained at this time. The man died within an hour of admission to the hospital, before any detailed examination was undertaken. Numerous anthrax bacilli were found in smears made from the sore on the chin, the meninges, the duodenal mucosa and the retroperitoneal glands, their character being confirmed by cultural and inoculation tests. The dura mater was unusually tense and everywhere of a purplish tint from the presence of blood underneath it and showing through. On reflecting the dura, the vertex of the cerebrum was seen to be almost uniformly covered by a thin layer of blood which lay not between the dura and pia mater but entirely in the meshwork of the pia-arachnoid and could be stripped off completely with the latter. The whole cerebrum was studded with hemorrhagic areas. The case demonstrates the dramatic rapidity with which the disease develops. In this instance the illness was at most of four days' duration. The case in all probability was one of shaving brush infection. The route of infection of the meninges has been described sometimes as being by the blood stream but more commonly by lymphatic spread. In this case the absence of facial edema and the presence of lesions in the intestine also suggest that the spread was probably a blood one.

Practitioner, London

113 168 (July) 1924

Insulin W H Willcox—p 1
*Chronic Dyspepsia in Childhood C E Sundell—p 13
Impotency and Sterility in Male M W Browdy—p 19
Pitfalls in Roentgen Ray Interpretation W Cotton—p 30
Roentgen Rays and Physiotherapy in General Practice J McGinn—p 43
Importance of Electrical Reactions L D Bailey—p 52
Present Position of Parathyroid Therapy M Critchley—p 56

Chronic Dyspepsia in Childhood—No case of chronic indigestion in a child, apart from those due to special causes mentioned Sundell asserts, should fail to yield to treatment on general lines, but until a proper habit of stomach and bowel control has been established drugs may be necessary. They should be regarded merely as temporary measures, and the child should be released from their discipline as soon as possible.

Quarterly Journal of Medicine, Oxford

17 319 423 (July) 1924

*Achlorhydria and Hydrochloric Acid Therapy in Pernicious Anemia M E Shaw—p 319

*Auricular Fibrillation in Thyrotoxic Conditions T P Dunhill F R Fraser and A W Stott—p 326
*Metabolism in Undernourished Infant G B Fleming and H S Hutchison—p 339
*Congenital Pancreatic Disease with Infantilism C Clarke and G Hadfield—p 358
Tubercle in Man from Laboratory Infection Three Cases J C G Ledingham and F R Fraser—p 365
*Progressive Lenticular Degeneration J G Greenfield F J Poynton and F M R Walshe—p 385
*Acid Base Equilibrium of Blood Alkalemia A W M Ellis—p 405

Achlorhydria and Hydrochloric Acid Therapy in Pernicious Anemia—Five cases of Addison's anemia were investigated by Shaw. The achlorhydria in these cases was absolute and could be measured. Theoretical considerations based on the estimation of the degree of achlorhydria suggest that about 2 drams of dilute hydrochloric acid would remedy the defect. Experimental evidence shows that 1½ to 2½ drams will restore the effective germicidal activity of the gastric juice in Addison's anemia if given by the "continuous" method.

Auricular Fibrillation in Thyrotoxic Conditions—The observations reported on by Dunhill, Fraser and Stott were made in fifteen cases of thyrotoxic auricular fibrillation. No cases that presented evidence of valvular heart disease were included. There were four cases of transient auricular fibrillation and eleven cases of persistent auricular fibrillation. The auricular fibrillation was persistent previous to treatment. In two of the cases of persistent auricular fibrillation the abnormal rhythm was associated with but slight evidence of general thyrotoxicosis. In three of the cases of persistent auricular fibrillation a return to a stable sinus rhythm occurred after partial thyroidectomy. In two of them this did not occur until three months after the operation. In four of the cases of persistent auricular fibrillation quinidin produced a stable sinus rhythm following the improvement in the thyrotoxic condition that occurred without operative treatment. A similar result was obtained in a case that later required operative treatment. In one case of persistent auricular fibrillation the thyrotoxic condition has not improved under medical treatment, and the sinus rhythm that results from quinidin is transient. Transient or unstable sinus rhythm resulted from quinidin in two cases during severe thyrotoxic activity, but stable sinus rhythm resulted in both after quinidin when the thyrotoxic condition had improved as the result of partial thyroidectomy in one of them and of medical treatment in the other.

Metabolism in Undernourished Infant—Although gastro-intestinal disturbance is one of the causes which may bring about marasmus, another is undernutrition due to a diet deficient in quantity. Fleming and Hutchison found that in the absence of gastro-intestinal disturbance there is no evidence of defective absorption or abnormal utilization of food in marasmus. The metabolic picture in marasmus is identical with that of undernutrition whatever the cause.

Congenital Pancreatic Disease—Clarke and Hadfield report the case of a child, aged 4 years, who had suffered from fatty diarrhea since birth. She was undersized and underweight, passed large, bulky, unformed and obviously fatty stools, but had never been jaundiced, the liver was greatly enlarged. Death from an intercurrent infection took place. The post-mortem examination confirmed a presumptive diagnosis of pancreatic disease, showing an extensive atrophy of the pancreas without obvious primary cause, the liver was extremely fatty and the colon dilated and thickened.

Progressive Lenticular Degeneration—Greenfield, Poynton and Walshe report the following case. Following a trivial injury to one foot a previously healthy girl of 14 developed an inability to keep her mouth closed, dribbling of saliva and progressive dysarthria. A year from onset she was observed to have an immobile masklike countenance, spasmodic weeping and laughter, a half opened mouth from which saliva trickled, limitation of range and rapidity of movement of facial muscles and tongue and a maintained flexion attitude of the arms and hands. There was no paralysis, nor any rigidity of the limb or trunk muscles. The reflexes and sensation were normal. During the last eight months of life these symptoms progressed and she became completely anarthric, developed dysphagia, increased frequency and intensity of spasmodic weeping and laughing, rigidity of the facial and upper limb

muscles, a general flexion attitude of the trunk and limbs, tremor of the hands, and finally rigidity and ample slow flexion-extension movements of the lower limbs. Death occurred in the twentieth month of the illness. The malady ran an afebrile course, and there were no symptoms referable to any hepatic lesion. The periphery of the cornea showed a zone of greenish haziness. Pathologically, the liver showed a profound atrophic multilobular cirrhosis. Naked eye examination of the brain revealed marked shrinkage of the corpus striatum, involving the putamen and caudate nucleus, the globus pallidus remaining normal in bulk. The affected areas looked granular in texture. Microscopic examination of the brain revealed degeneration of the nerve cells in the putamen and caudate nucleus with neuroglial overgrowth. Similar but much slighter changes were present in the globus pallidus and nucleus ruber. Marchi staining revealed degeneration in the tracts leading from the putamen to the nucleus ruber and corpus luyssi and also of the posterior longitudinal bundle and superior cerebellar peduncle. The corneal pigmentation was due to the presence of fine brown granules in Descemet's membrane at the periphery of the cornea.

Acid-Base Equilibrium of Blood.—Four cases of alkalemia are reported by Ellis: two due to overdosing with sodium bicarbonate and two due to a high intestinal obstruction. A fifth case of low intestinal obstruction is added for comparison. The results of chemical investigations of the blood and urine of these five cases are given. The theory is advanced that the ketonuria of alkalemia is due to anoxemia. The opinion is expressed that the disturbance of the acid-base equilibrium to the alkaline side may well prove more important in disease in man than those in the opposite direction which have hitherto received our almost exclusive attention. The successful treatment of alkalemia by the administration of ammonium chlorid per rectum is reported.

South African Medical Record, Cape Town

22 271 294 (June 28) 1924

- *Blackwater Fever. O. E. Jackson—p. 273
- Opacities in the Vitreous. F. H. Robinson—p. 286
- Mitral and Aortic Disease After Recovery from Auricular Flutter. H. L. Heilmann—p. 287
- Malaria Treatment of Progressive Paresis. J. M. Moll—p. 288

Tubercle, London

5 465 512 (July) 1924

- *Treatment of Tuberculosis of Bones and Joints. G. R. Girdlestone—p. 465
- *Interrelations of Pulmonary Tuberculosis, Influenza and Pneumonia. W. H. Dickinson—p. 479
- Output of Urea During Acclimatization to High Altitudes. A. F. Bill and F. H. Healey—p. 490

Tuberculosis of Bones and Joints.—Girdlestone stresses the point that a tuberculous focus in a bone or a joint is the obvious part of a deep rooted disease serious in itself, crippling if there is delay, disastrous if there is neglect but it is also evidence of tuberculous infection of the body which pre-existed but is now gaining the upper hand. On the other hand, modern treatment with its artistic use of rest, food and weather, if started in good time and kept up long enough will almost always bring about a cure—a cure that skilled after care will make permanent. Thus the crippling and disaster can be forestalled and a lifetime of health and activity take their place. This treatment necessitates a special open air hospital and a staff experienced and technically expert but there is no need to transplant a patient from his home climate to a distant hospital. Rather is a hospital in the district twice as good as one in the distance, for it will admit its patients early, follow them home when they go out, take watchful care of them, and spare no effort to make their cure complete and final.

Incidence of Influenza and Pneumonia in Tuberculosis.—Dickinson reports on an inquiry made to ascertain the incidence of influenza and pneumonia on 536 tuberculous patients attending a dispensary and their home contacts. Two hundred, or 37.3 per cent, stated that they had suffered from influenza whereas of the 2,386 other members of their household 616 or only 25.8 per cent, have a history of having had the disease since June, 1918. Thus, of the 2,922 persons

included in the scope of this investigation, 816 were reported to have had influenza, and forty-one of these had pneumonia, of whom nineteen died, giving a pneumonia incidence of 48 per cent and a case fatality rate of 23 per cent. Acute influenzal pneumonia was found to be followed by pulmonary tuberculosis in a greater proportion of instances than was lobar pneumonia, the total number of cases, however, was small and there was no evidence that influenza proper was a serious factor in increasing the morbidity of tuberculosis. Many of the definite cases suffered an aggravation of their disease as a result of an attack of influenza, and two patients with an artificial pneumothorax died of acute influenzal pneumonia.

Annales de l'Institut Pasteur, Paris

38 529 650 (July) 1924

- Choking of Silkworm Cocoons. G. Bertrand—p. 529
- *Specific Dressings. A. Besredka—p. 563
- Tuberculous Infection in Rabbits. F. Coulaud—p. 581
- The Streptococcus of Glanders. Brocq, Rousseau et al.—p. 599
- Flocculation in Diagnosis of Syphilis. Demanche and Guenot—p. 675
- *Hydrophobia Vaccinations in 1923. J. Viret—p. 648

Specific Immunizing Dressings.—Besredka produced in animals only a slight immunity by subcutaneous injections of a staphylococcus vaccine. No protective action was obtained with injections of streptococcus vaccines except when injected into the skin. Filtrates from eight day old cultures applied in dressings protected the animals within one day after this procedure. The protective substance is thermostable (stands heating to 60 C for one hour). Clinical results with local application of such vaccines (instillation into the ear, tampons in the uterus) gave excellent results. Thus the inefficiency of vaccination with streptococci was due to the wrong way of application. The principle is to apply the vaccine directly to the receptive tissues thus inducing their local immunity without the necessity for production of humoral antibodies.

Tuberculous Infection in Rabbits.—Coulaud observed seventeen instances of tuberculosis in rabbits living in the same cage with tuberculous neighbors. He believes that the disease was contracted through the alimentary tract. In spite of this the first visible lesions developed in the lungs, here as well as in other experiments.

Flocculation in Diagnosis of Syphilis.—Demanche and Guenot performed 2,500 syphilis tests with Vernes' flocculation method. Its advantage is specificity, quantitative results and a comparatively easy technique especially in long series of tests. It is, however, less sensitive than the Wassermann or especially, the Hecht method.

Hydrophobia Vaccinations in 1923.—All of the 1,481 patients subjected in Paris in the last two years to preventive inoculation against hydrophobia were successfully protected.

Annales de Medecine, Paris

16 5 83 (July) 1924

- Histopathology of Multiple Sclerosis. G. Marinesco—p. 5
- *Idiopathic Megadiaphragm. L. Bard—p. 26
- *Anergy in Liver Disease. N. Fiessinger and P. Brodin—p. 46
- *Erythromelalgia. F. May and P. Hillemand—p. 51

Idiopathic Stretching of the Diaphragm.—Bard emphasizes that the diagnosis of abnormal length of one half of the diaphragm in all diameters is made only by the roentgen rays. The megadiaphragm involves almost exclusively the left half of the diaphragm and affects males in 75 per cent of the cases.

Anergy in Liver Disease.—Fiessinger and Brodin ascribe to anergy the increased susceptibility to tuberculosis in liver disease. Thus a chronic nontuberculous affection of the liver may favor invasion by tubercle bacilli, and aggravate an encapsulated tuberculosis owing to defective protection of the organism, from the insufficiency of the liver.

Erythromelalgia.—May and Hillemand have compiled 160 cases of organic, reflex or functional erythromelalgia. The list includes an infant and a man of 92. Tentative treatment for syphilis cured two of their personal cases, organotherapy aided in others, severing the posterior roots involved has given conflicting results.

Archives des Maladies du Cœur, Paris

17 401 480 (July) 1924

- Permanent Septal Bradycardia E Donzelot and E Geraudel—p 401
The Dual Automatism of the Heart F Donzelot—p 409
Chronic Myeloid Leukemia in Woman of 68 Sabrazes—p 415
Femicious Anemia in Endocarditis Courtois Suftit et al—p 418
Hippocratic Fingers with Aneurysm A Hanns—p 425

17 481 544 (Aug) 1924

- *Primary Hypertrophy of the Heart L Bouchut and Bonafe—p 481
Shadow of Enlarged Heart in Radioscopy Bordet and Groux—p 494
Cardiac Arrhythm in Paroxysmal Tachycardia L Gillavardin et al—p 500
Cardiovascular Complications of Acute Nephritis C Lian and J Huguennu—p 506

Primary Hypertrophy of the Heart—Bouchut and Bonafe describe an essential hypertrophy of the heart, primary, of infectious or toxic origin. This hypertrophy represents a grave cardiopathy without any histologic changes, a *myocardite hypertrophique*. It is not associated with arterial hypertension and may coexist even with hypotension.

Comptes Rendus de la Société de Biologie, Paris

91 517 612 (July 25) 1924

- Treatment of Neurosyphilis with Tryparsamide H Claude and K Targowla—p 527
*The Blood in Malignant Disease J Lavedan—p 530
*Radio sensitivity Reduced by Ligature J Jolly—p 532
*Splenectomy Increases Glycemia H Bierry et al—p 537
Gastric Leukopenesis and Intolerance of Food Loeper and Marchal—p 547
Sugar Content of Arterial and Venous Blood of Organs Before and After Insulin P Mauriac and E Aubertin—p 554
Survival of Tubercle Bacilli in Books Moureau and Touchais—p 560
*Echinococcosis in France P Desoix—p 570
Influence of Epinephrin on Phosphorus and Calcium Content of Blood P Woringer—p 588
Direct Action of Secretin on Surviving Organs Troteano—p 590
Research on Ultrafiltrated Plasma Hirth and Tschumber—p 592
Physical State of Blood Sugar Delaville and Quittner—p 595
*Minerals in Blood in Osteomalacia L Blum et al—p 599
Antagonistic Action of Pituitary Extracts J La Barre—p 601
*Swallowing of Amniotic Fluid by Embryo S Vrbitch—p 604
*Roentgen Rays and Growth Ancel and Vintemberger—p 606
*Action of Roentgen Rays on Epistaxis G Canuyt and M Wolf—p 611

Blood Changes with Cancer—Lavedan's research on 200 cases of epithelioma without cachexia showed only inconstant and not pronounced changes in the blood. The blood seems to be for a long time neither disturbed nor affected by the malignant tumor. The changes are due to a complication.

Effect of Ligature on Radiosensitivity—Jolly succeeded in diminishing the reaction to irradiation of the popliteal gland by ligating the afferent arteries. Shutting off the blood supply seemed to produce changes in the metabolism and function of the cells. It suggests the idea that, by inducing physiologic changes in the cells, it may be possible to increase or to lower the radiosensitivity of organs.

Effect of Splenectomy on Glycemia—Bierry, Rathery and Levina's experiments on dogs proved that splenectomy affects the glycemia producing a more or less persistent increase of the free and the proteid sugar.

Vitality of Tubercle Bacilli in Books—Experiments with pages of books contaminated by tuberculous sputum proved to Moureau and Touchais that the time of the school vacation is not long enough to make the tubercle bacilli inoffensive. Inoculations in guinea-pigs were still virulent after a period of 130 days.

Alveolar Echinococcosis of Liver in Man—Desoix observed in northern France a patient with echinococcosis alveolaris of the liver, similar to the bovine form. The infestation is explained by importation of cows from a country where the disease is endemic.

Minerals of Blood in Osteomalacia—Blum, Delaville and Van Cauhaert examined the mineral composition of the blood in a case of osteomalacia. The amount of alkali, sodium, calcium and chlorine was decreased. The content of magnesium and phosphorus was normal. The decrease of alkali was due not to an excess of acids, but to a hypo alkalosis. A considerable lowering of sodium and calcium was not influenced by minerals in the food. It was a sign of mineral instability of the plasma.

Pituitary Extracts and Coagulation—La Barre tried the effect of the extracts of the anterior and posterior lobes of the pituitary on coagulation *in vitro*. The extract of the posterior lobe did not produce coagulation, but seemed to accelerate it, through a more active formation of thrombin and fibrin. The extract of the anterior lobe markedly delayed coagulation. The delay did not occur if the extract was prepared with ether.

Absorption of Amniotic Fluid by the Embryo—Vrbitch's research authorizes the conclusion that the embryo of fowls starts to swallow the amniotic fluid in the middle of embryonal life, and swallows more the older it is. Cells of epidermis and hair were found also in the intestine of a rabbit fetus. It may be presumed that the fluid, which is absorbed regularly in large amounts, exerts some function.

Action of Roentgen Rays on Embryos—Ancel and Vintemberger found that a weak dose of roentgen rays retarded the development of hens' eggs. The same dose did not change, or it delayed the development of frogs' eggs. The delay was the more pronounced the larger the dose of the rays. No acceleration was observed.

Action of Irradiation on Epistaxis—Canuyt and Wolf treated essential hemorrhages, such as nosebleeds occurring mostly in young subjects by irradiations of different regions (hand, leg, face), always avoiding the viscera. An arrest of hemorrhage was obtained after one, two or three exposures, often after one hour of irradiation. In one case with daily hemorrhages during three years the hemorrhages have not reappeared during the three months since. A patient with a continuous hemorrhage for eight days was cured after one exposure. The treatment has been without results only in two cases.

Liege Medical

17 873 896 (Aug 3) 1924

- *The Stimulus for the Respiratory Center L Dautrebande—p 873
Retroversion of Pregnant Uterus Brouha—p 883

The pH of the Respiratory Center—Dautrebande concludes his review of the present status of our knowledge as to the factors that stimulate the respiratory center with the remark that to date there is nothing known which conflicts with the assumption that the hydrogen ion concentration of the center—not of the arterial blood—is the normal stimulus for this center.

Nourrisson, Paris

21 217 288 (July) 1924

- Tuberculosis of Bronchial Glands A B Marfan—p 217
*Anaphylaxis in Infants to Cow's Milk Sales and Verdier—p 242
Ritter's Disease P Woringer—p 266

Anaphylaxis to Milk in Infants—Sales and Verdier emphasize that the differential diagnosis between anaphylaxis and a mere intolerance for cow's milk can be made only by transmission of passive anaphylaxis to the guinea-pig. The treatment consists in desensitization, starting with two drops at a feeding or the amount tolerated, and progressively increasing until the normal ration is reached.

Presse Médicale, Paris

22 665 672 (Aug 9) 1924

- *Epidemic Poliomyelitis Ducamp et al—p 665
Splint for Abduction of Arm R. Bonneau—p 666
*Hemispasms of Face L Levi—p 667
Sodium Nitrite in Injections L Chermisse—p 671

Epidemic Poliomyelitis—Ducamp, Guet and Didry point out that the different forms of pains, accompanied by fever, in acute anterior poliomyelitis depend on the section of the cerebrospinal axis in which the virus is localized. Transient pains disappearing as paralysis occurs, are signs of an affection in the posterior horns. Persistent pains, coexisting with paralysis, are rarely generalized, and are due to disturbances in the sensory nerves (meningitis with tendency to chronicity). Persistent pains, localized in certain nerve trunks are produced by motor and sensory neuronitis, similar to an infectious neuritis.

Hemispasms of Face—Levi's conclusion based on four observations is that facial spasm of peripheral origin, not associated with contracture of the muscles, corresponds to

facial paralysis. It is due to irritation of the nerve, and is curable. The spasm combined with contracture of the muscles, primary or secondary to facial paralysis, is incurable. The facial contracture is a pure sympathetic muscular syndrome, free from skin and vasomotor manifestations. The contracture is caused by hypertonicity of the sarcoplasm of the mimetic muscles from irritation of the sympathetic fibers accompanying them. Electrolysis might be tried in treatment.

Revue de Chirurgie, Paris

62 443 506, 1924

Pedunculated Sarcoma of Small Intestine Vautrin and Michon —p 443

Why Some Stumps Are Bad F Duguet —p 454

*Periarterial Sympathectomy J Jiano —p 482

*Congenital Luxation of Hip Joint R Ducroquet —p 496

Periarterial Sympathectomy—Jiano reports from Bucharest thirty cases in which Leriche's operation was applied. With dry gangrene, the irritation maintains a spasm in the collaterals and terminal ramifications below, the action of the spasm thus superposed on the mechanical obstacle. The resection of 10 or 15 cm of the periarterial sheath of sympathetic fibers arrests this spasm. In destructive syphilitic lesions, the inadequate blood supply to the region prevents the specific drugs from reaching the tissues. The periarterial sympathectomy on the trunk nerve induces peripheral vasodilatation below. This allows freer access of blood, and has proved a valuable aid not only in torpid syphilitic lesions of the extremities but also in lesions of the central nervous system, refractory to drug treatment. In one case bilateral tabetic trophic lesions healed and lightning pains became attenuated after sympathectomy of both femoral arteries in the triangle of Scarpa. The only failures were in a case of a tuberculous process in the knee and one of pelvic neuralgia; no effect was apparent. He always uses a pedunculated flap of fascia to form a muff around the artery over the denuded region. He also always leaves a suture thread passed beneath the artery above, to serve as a ligature in any emergency.

Spontaneous Correction of Congenital Luxation of Hip Joint—Ducroquet gives roentgenograms of several of the eleven cases on record in which the clinical symptoms of congenital dislocation of the hip joint were confirmed by radiography but under expectant treatment the luxation subsided. Ducroquet adds two personally observed cases to the list, girls aged 20 and 21 months, the congenital dislocation bilateral in one. In this case the dislocation recurred after operative treatment and use of a cast. A second operation was contemplated, but radiography four weeks later showed improvement, and in another year absolutely normal conditions. The correction occurred gradually in all these cases between the fifteenth and thirtieth month of life, and was traced with the roentgen rays. He queries whether systematic roentgen-ray examination of young children might not show that such spontaneous cures are common. They may justify expectant treatment until a little later than is generally advised for intervention.

Schweizerische medizinische Wochenschrift, Basel

54 713 740 (Aug 5) 1924 Dedicated to International Conference on Tuberculosis

*The Fight of the Organism Against Tuberculosis H Sahli —p 713

*Virulence of Tubercle Bacilli W Silberschmidt —p 721

*Lupus Erythematoses and Tuberculosis Bloch and Ramel —p 723

Tuberculosis and Liability P Zollikofer —p 726

Results of Sanatorium Treatment W Knoll and O Deppeler —p 732

The Fight of the Organism Against Tuberculosis—Sahli reviews the various ways in which the human organism combats tuberculous infection. He believes that chemotaxis consists in attraction of the leukocytes by the products of destruction of tissues—not by the noxious agents themselves. Exudates neutralize the toxins. He recommends his sub-epidermal tuberculin treatment with Beraneck's tuberculin as the best available.

Virulence of Tubercle Bacilli—Silberschmidt found a constant virulence in a long series of guinea pigs in a strain which had killed a girl, aged 6, within six weeks. The strain produced also tuberculosis in rats and mice, especially with intravenous injections of larger doses.

Lupus Erythematoses and Tuberculosis—Bloch and Ramel produced tuberculosis in guinea-pigs, with injections of the blood from a patient with an acute lupus erythematoses. No bacilli were found in the affected skin. They believe that the process is conditioned by a biologic modification of the virus in the skin of such patients, and they point out certain analogies with tuberculosis of rats.

Archivio Italiano di Chirurgia, Bologna

9 469 576 (July) 1924

Diverticula in Pharynx and Esophagus B Anglesio —p 469

Hernia of the Lung F Satta —p 509

*Rotation of Stomach M Selmi —p 519

Adenofibromyxoma of the Mamma L Durante —p 526

Malformation of Bile Ducts with Lithiasis Giuliani —p 537

*Dilatation of Stomach Secondary to Nephropexy F Stoccardi —p 550

Incarcerated Retrograde Double Hernia S Lussana —p 563

Rotation of Stomach—Selmi presents evidence to prove that the stomach filling with food enlarges without any tendency to the traditional passive rotation.

Acute Dilatation of the Stomach Secondary to Nephropexy—Stoccardi has collected five cases in which the acute dilatation developed secondary to nephrectomy, once after nephrotomy, and twice after nephropexy. The two latter cases proved fatal, but he adds a third case to this group, with recovery. There was no stiffening of the abdominal wall, no pain and no fever which excluded acute peritonitis, suggested otherwise by the alarming clinical picture, and volvulus could also be excluded. He thinks that many deaths ascribed to the vicious circle after gastro-enterostomy are in reality fatalities from acute dilatation of the stomach, this was revealed by the necropsy in one of his own cases. Torracca's experiments on animals demonstrated pronounced cytologic changes in the nerve plexuses of the digestive tract after trauma or inflammatory processes or changes in the blood supply. Stoccardi ascribes to the toxic action of the ether the acute atony in his case as an unusual amount had been given on account of vomiting during the operation. The stomach was rinsed out several times, the patient placed in the knee-elbow position for several hours, with brief intermissions. Relief was immediate, especially of the heart and respiratory symptoms, and in two days recovery was complete.

Pediatria, Naples

32 881 944 (Aug 1) 1924

Tuberculosis in Infants C Cattaneo —p 881

*Germ of Measles M B Sindoni —p 888

Preleukemia in Children A de Capite —p 897

Generalized Desquamative Erythrodermia C Belloni —p 907

Isohemolysis in Mother and Child Rapisarda and Pollitzer —p 916

Leukemia G Artusi —p 918

Germ of Measles—Sindoni confirms the presence of Caronia's micro-organism in blood, nasopharyngeal mucus, cerebrospinal fluid, urine, scales and bone-marrow in measles. Controls were negative. The germ is a gram-negative coccus of from 0.3 to 0.4 micron in diameter. The virus is filtrable. She admits that only a few visible forms develop in the cultures.

Policlinico, Rome

31 345 400 (July 15) 1924 Surgical Section

Peptic Jejunal Ulcer S Gussio —p 345 Cont'd

*Reinfusion of Extravasated Blood C Rossi —p 358

*Obiteration of Mesenteric Vessels L Torchiana —p 383

Cineplastic Amputations in Argentina Bosch Arana —p 397

Reinfusion of Extravasated Blood—Rossi induced in fifteen dogs conditions like those in man after internal hemorrhage and reinfusion of the blood. One of the dogs developed symptoms of toxic action and died and a second dog displayed similar symptoms but recovered. The changes in the extravasated blood in the peritoneum were found amply sufficient to explain the toxic phenomena. The microscope can be depended on to reveal whether the extravasated blood has lost its vitality and, if so, is unsuitable for reinfusion. The physical and chemical changes in the blood he does not regard as so important as the shape and size and color of the erythrocytes, showing that they are still functionally capable, regardless of the interval that has elapsed since the extravasation. His research corroborates the extremely

favorable influence of the reinfusion when conditions are propitious for it

Obliteration of Mesenteric Vessels—Torchianna's patient was a man of 56 who died seven days after the first symptoms. There was no vomiting, diarrhea, hypothermia or shock until the last few hours. The severe paroxysms of pain had started first in the left hypochondrium but had soon spread throughout the abdomen. Necropsy first explained the case as infarction of the bowel without the usual symptoms.

Riforma Medica, Naples

40 697 720 (July 28) 1924

- Tuberculosis Pneumonia of Upper Lobe G Castelli—p 697
- *Nonspecific Agglutination A Distria—p 700
- Ozone and Its Applications in Hygiene G Graziadei—p 701
- Specialized Research Institutes F Marigliano—p 714

Nonspecific Agglutination—Istria produced by injections of glucose in some rabbits a low agglutination titer against typhoid bacilli. The agglutinins disappeared in a few days. Other injections failed to have any similar effect—contrary to the findings of other authors.

40 721 744 (Aug 4) 1924

- Malformations of Kidneys A G Chiariello—p 721
- *Spasmodic Laughing and Weeping M Battain—p 722
- *Serotherapy of Typhoid L Pistocchi—p 726
- *Case of Hemophilia C Secco—p 727
- Asthma from Streptococci G Venturini—p 729
- Swine Erysipelas in Man Gioseffi—p 731

Spasmodic Laughing and Weeping—Battain discusses the changes in the putamen in persons suffering from attacks of involuntary laughter or weeping. Unilateral lesions are sufficient to produce the phenomenon. Interruption of inhibitory pathways from the cortex cause it, as well as direct irritation of the center.

Serotherapy of Typhoid—Pistocchi had good results with Minerbi's injections of a mixture of antisera (typhoid, pneumococcus, streptococcus and staphylococcus), if used in the first two weeks of typhoid fever. The added sera are intended to prevent complications.

Case of Hemophilia—Secco describes a chronic hemorrhagic condition in a woman 32 years of age. She suffered from grave epistaxis when 7 years old, and large ecchymoses since the age of 16. The coagulation time was normal during the hemorrhagic phases and prolonged between them. Addition of thrombokinase or of glass powder shortened the time of coagulation. The morphology of the blood was normal.

Anales de la Facultad de Medicina, Montevideo

373-478, 1924

- *Dilatation of Left Auricle J Montes Pareja and P A Barcia—p 373
- *Radium Therapy in North America E Pouey—p 402
- Scirrhus Cancer of Breast with Tuberculous Gland Lamas—p 439
- Calcium in Blood Serum in Tuberculosis A Prunell—p 443
- Case of Actinomycosis of Right Iliac Fossa Clivio Nario—p 453

Dilatation of Left Auricle—Montes Pareja and Barcia report the case of a man aged 35 who complained of pains in the right side of the chest, frequent dizziness and dyspnea. Twenty-two illustrations and tracings show the data on which they based the diagnosis of aneurysm of the left auricle, protruding far on the right side, and confirmed by the course of the case.

Radium Treatment in North America—This is the first half of Pouey's official report on his mission to study radium therapy in America and Europe.

Revista de la Asoc Med Argentina, Buenos Aires

37 1 54 Internal Medicine (June) 1924

- *Surgical Treatment of Angina Pectoris J Diez—p 5
- Diagnostic Intratracheal Injection of Iodized Oil Castex et al—p 34
- Duodenal Tube in Diagnosis Arrillaga et al—p 41

Surgical Treatment of Angina Pectoris—Diez operated by Jonnesco's technic in three cases, and relates that not only the paroxysms of pain but also the suffocative attacks and the erethism of the heart disappeared after the operation, and the functioning of the myocardium keeps progressively improving. He thinks that the method of Coffey and King

Brown resects only the elements which are of minor importance in the transmission of the pains, sparing the really essential elements. After the operation, his three patients displayed intense hyperesthesia in the skin of the region, it kept increasing for a month but then gradually disappeared by the third month. His first patient was a man aged 43 who had been having angina pectoris for eleven years. The number and duration of the attacks had been constantly increasing until he was having three a day. Since the operation he has had no pains and no tendency to dyspnea or cardiac erethism even after an eleven mile walk. The third case teaches that severe heart or valvular disease reduces the benefit attainable by the operation.

37 1 21 Urology (June) 1924

- *Syphilis of the Bladder C A and E Castano—p 5
- Acute Retention of Urine from Calculus in Ureter Salleras—p 17
- Urethralanoposthetic Fistula G Vilur—p 20

Syphilis of the Bladder—The Castaños analyze a typical case in a woman aged 33. The diagnosis was based on the pains and occasional hematuria, the ulcerative papillomatous form of the cystitis with comparatively normal urine and the slight impairment of the general health in comparison to the bladder findings.

Revista Medica del Uruguay, Montevideo

27 97 144, 1924

- *Negro Sign in Facial Diplegia P Seremini—p 97
- *Auto-agglutination F Cliveaux and Perez Sánchez—p 108
- Exophthalmic Goiter in Diabetes C Bordoni Posse—p 118
- Primary Erysipelas of Tongue Montes Pareja and H Reta—p 128
- *Parotitis in Pneumonia V Zerbino and A Battione—p 137

The Negro Sign in Facial Paralysis—The peripheral facial diplegia had developed soon after preventive vaccine treatment of hydrophobia. As the eyeballs were turned upward, the excursion was exaggerated (Negro sign) on the side affected first and most severely by the paralysis.

Auto-Agglutination in Pneumonia—The young woman was apparently convalescing normally from a moderate attack of pneumonia when symptoms developed explained by the discovery that the erythrocytes were clumped so tightly that it was impossible to count them, and the hemoglobin percentage was very low. The serum agglutinated the blood corpuscles at 1:10 but did not agglutinate corpuscles from other persons and the woman's corpuscles were not agglutinated by other sera. There was no autohemolysis. The patient had been given several injections of her own blood during the pneumonia, but an interval of eight days had elapsed after the crisis and the last injection of own blood before the symptoms of intense anemia became apparent, with inversion of the leukocyte formula, leukopenia, and slight fever, but final recovery.

Parotitis in Pneumonia—The parotitis developed with stormy onset the sixth day of pneumonia in a boy. The pneumococcus was responsible for both and the course was mild.

Deutsches Archiv für klinische Medizin, Leipzig

144 321 378 (July) 1924

- Arsenic Treatment of Pernicious Anemia A Engelhard—p 321
- *Temperature in Pernicious Anemia H Lehmann—p 327
- *Blood Metabolism in Hemochromatosis G Kühl—p 331
- *Liver Dulness in the Back C Cianci—p 339
- *Acute Lymphatic Leukemia H Ullmann and H Weiss—p 344
- *Nephrogenous Hypertrophy of Heart E Kirsch—p 351
- *Treatment of Syphilitic Aortitis G Wodtke—p 357
- Traumatic Cancer of Left Lung Aufrecht—p 371

The Temperature and Hemoglobin in Pernicious Anemia—Lehmann found a parallelism between the decrease of subfebrile temperature and the increase of hemoglobin in pernicious anemia. If the temperature persisted above normal not much remission was evident.

Blood Metabolism in Hemochromatosis—Kühl determined in a patient with bronze diabetes the urobilin in the urine and feces. It was much increased at times. The erythrocytes showed signs of regeneration during these periods. There was at times a decrease in blood platelets. Leukopenia with relative lymphocytosis was another unexplained feature of the case. No hematorporphyrin was found in the urine.

Liver Dulness in the Back—Cianci confirms Grocco's observation on the absolute liver dulness extending from 3 to 5 cm to the left of the spine. He found in Banti's disease, typhoid, septicemia, cholangitis and in malaria above this absolute dulness an area of relative dulness. The latter was absent with enlargement of the liver of other origin.

Acute Lymphatic Leukemia—Ullmann and Weiss observed the whole hematologic development of an acute lymphatic leukemia in a boy operated on for influenza otitis. The blood findings suggested pernicious anemia at first.

Nephrogenous Hypertrophy of Heart—Kirch measured the inner walls of the heart and weighed its parts in nephritis. He found an isolated hypertrophy of the left ventricle in uncomplicated cases. The left auricle and the right ventricle become hypertrophied only secondarily after weakening of the left ventricle.

Treatment of Syphilitic Aortitis—Wodtke advocates combined neoarsphenamin treatment of syphilitic aortitis. The treatment should be undertaken as early as possible. The possibility of syphilis should be taken into consideration whenever any of the symptoms of aortitis are found. Syphilitics should always be reexamined for aortitis.

Deutsche medizinische Wochenschrift, Leipzig

50 1039 1070 (Aug. 1) 1924

- *Changes of Position of Uterus. Stoeckel —p. 1039
- *Ovaries and Endocrine System. L. Fraenkel —p. 1041. Begun p. 1007
- *Titration of Dysentery Antiserum. F. Neufeld —p. 1043
- *Disinfection of Surgical Instruments. M. Kirschner —p. 1044
- *Action of Epinephrin in Man. E. Hassencamp —p. 1044
- *The Cerebrospinal Fluid. M. Flockenhaus and F. Fonseca —p. 1045
- *Sedimentation Test and Hemoclasia. B. Engelmann —p. 1046
- *Noncontagious Pulmonary Tuberculosis. H. Braeuning —p. 1048
- *Specific Cancer Poison. R. Seyderhelm and W. Lampe —p. 1050
- *Metabolism of Cancer. Tadenuma et al. —p. 1051
- *Experimental Canceroid of Uterus. Teutschlaender —p. 1051
- *Pneumogastric Reflexes. S. Weissenberg —p. 1056
- *Toxicosis of Infants. C. Schiff —p. 1056
- *The Necessary Number of Children. K. Freudenberg —p. 1058

Ovaries and Endocrine System—Fraenkel found that extirpation of corpora lutea in rabbits up to fourteenth day of gravidity is followed by an abortion. If it is done later the embryos develop normally and the uteri atrophy only afterwards. The ovaries suffer in all affections of the other endocrine organs, regardless of whether the function of the latter is increased or decreased. Fraenkel examined women inmates of insane asylums. He found there more cases of grave hypoplasia of the sex organs than in his purely gynecologic practice. It was most pronounced in schizophrenia, less in epilepsy and imbecility, and never in other diseases. The ovary of the nonpregnant woman inhibits moderately all the other endocrine organs. In pregnancy the ovary is aided by the other endocrines. He points to this lack of *do ut des* "All for one and the one against all."

Titration of Dysentery Antiserum—Neufeld publishes Papamarku's results on testing antidyenteric serum with emulsions of agar cultures. The action was quite different as living or killed cultures were used. Some serums had a marked antimicrobial action with a low antitoxic, and vice versa.

Action of Epinephrin in Man—Hassencamp found an inhibition of diuresis after slow intravenous injections of 0.25 mg of epinephrin. This was also marked, together with an increase in blood pressure, in patients with "red" or "white" hypertension.

Diagnosis from Cerebrospinal Fluid—Flockenhaus and Fonseca consider Pandey's and the colloidal gold reaction as sufficient for the great majority of samples of cerebrospinal fluid. The sediment should be examined especially to exclude admixture of blood. The Wassermann reaction is useful for exclusion of multiple sclerosis. Two such patients with rapidly progressing symptoms gave a paralysis curve.

Sedimentation Test and Hemoclasia—Engelmann finds the sedimentation test after milk ingestion of no use for diagnosis of hemoclasia or of an affection of the liver.

Specific Cancer Poison—Seyderhelm and Lampe extracted fresh human cancer tissue with alcohol. Only the extracts

obtained at -17°C were toxic. It seems that the poison is destroyed at room temperature by the ferments of the cancer.

Metabolism of Cancer—Tadenuma, Hotta and Homma found in fowls a lower blood sugar in the vein of a wing with a sarcoma than in the other wing. Glycolysis was also much stronger in the former blood. They point out that the presence of a substance resembling insulin is probable. The tumor blood contains less amylase than the blood from the healthy wing.

Experimental Canceroid of Uterus—Teutschlaender injected tar into the vaginas of seven rats. The substance reached into the uteri and induced, in four of them, the formation of a squamous epithelium in the horns of the organ. In one of them a canceroid penetrating through the wall was found 242 days after the first injection. This formation of cancer from a squamous epithelium instead of from the original cylindrical epithelium indicates that the impulse acted probably on the basal cells of the new epithelium in statu nascendi.

Pneumogastric Reflexes—Weissenberg frequently observed carache in pharyngitis. He believes that this is due to a pneumogastric reflex. He suffers from premature heart contractions. Every stop in the heart action produces a cough in him. The cardiac troubles with distended stomach and vomiting in gallbladder and kidney colics are also instances of vagus reflexes. Gatcher has noticed in apical infection carache on the same side.

Toxicosis of Infants—Schiff believes in a disturbance of the liver in toxicosis of infants. He attributes it to a change of the intermediary protein metabolism, due to acute dehydration.

Deutsche Zeitschrift für Chirurgie, Leipzig

186 145 288 (July) 1924

- *Diagnosis of Duodenal Ulcer. A. Beck —p. 145
- *Imperfectly Obliterated Omphomesenteric Duct. Lohr —p. 156
- *Nature of Heart Beat. F. K. Frey —p. 168
- *Acute Osteomyelitis of Hip Joint. Portwich —p. 236
- *Presarcotic Processes. A. Beck —p. 255
- *Fat Embolism from Humeral. H. Koch —p. 273
- *Retroperitoneal Perforation of Gallbladder. L. Süssing —p. 279
- *Volvulus with Malformation of Intestine. K. Braeuning —p. 284

Diagnosis of Duodenal Ulcer—Beck found nothing to explain the clinical picture of duodenal ulcer in 2 of the 52 cases in which he operated on this diagnosis. All but 9 per cent were men, aged 18 to 75. Tests for occult blood were sometimes negative with a florid ulcer, and vice versa. The gastric chemistry was normal in about half the cases. The roentgen-ray findings vary at different times, and their testimony for or against an ulcer is not absolutely dependable. A filling defect in the upper duodenum was found by Lorenz in 3 of 167 cases. Alerlund 66 in 106, Beck, 3 in 46, and the duodenum was hidden behind the stomach in 5 per cent of Chrouls cases. Symptoms of gastritis in the antrum are presumptive evidence of a duodenal ulcer especially when the duodenum and not the stomach wall is tender on pressure. Adhesions from gallstones pulled the duodenum out of shape in two cases and led to the mistaken diagnosis of a duodenal ulcer.

Nature of Heart Beat—Frey relates that the heart continued to beat regularly and vigorously after the heart muscle had been thoroughly impregnated with different poisons which arrest the action of nerves and ganglions. He accepts this as direct proof of the myogenous origin of the cardiac impulse. Infiltration of the walls of the heart with drugs which have a specific action on the functioning of the heart was not followed by the characteristic phenomenon on the part of the heart. The research with strophanthin made it probable that in the action of every poison and toxin nervous influences are a very important factor, as we know is the case in inflammation. In rabbits, intravenous injection of strophanthin produces much less of an effect after both vagi have been severed. The typical reaction of the dog heart to intracardiac or intravenous injection of strophanthin does not occur when the innervation of the heart has been blocked with procain even when otherwise lethal doses of strophanthin are injected. One dog injected intravenously with 0.25

mg of strophanthin per kilogram—after the heart nerves had been blocked with 6 cc of a 2 per cent solution of procain—had a normally regular heart beat during the hours afterward and seemed fresh and vigorous, speedily recuperating. This dog succumbed to pleurisy five days later.

Presarcoma Lesions—Beck describes two cases of a persisting focus of old osteomyelitis with torpid fistulas in a man and a woman, aged 35 and 46, in which the regenerating tissues showed sarcomatous degeneration. This sustains the possibility of a traumatic origin for sarcoma.

Fat Embolism from Injection of Oil—Koch knows of only one published case of fat embolism from injection of olive oil. He here reports an instance of severe pulmonary and cerebral fat embolism after injection of 24 gm of tried oil human fat (Humanol). The young man recovered. The injection had been made in the neck, for cosmetic purposes, in a healed glandular focus.

Jahrbuch fur Kinderheilkunde, Berlin

106 177 262 (July) 1924

Value of Fat Determination in Human Milk H. Koeppel—p. 177

Therapeutic Value of Suggestion in Pertussis Zanker—p. 195

*Trypanocidal Substance in Blood Grunmandel and Leichtentritt—p. 203 and p. 215

*Researches on Lipase and Diastase in Children Hizume—p. 227

Congenital Stenosis of Small Intestine in Infant Hueter—p. 245

Clinical Value of Determination of Fat Content of Human Milk—Koeppel emphasizes that it is not always sufficient to measure the quantity of milk a child secures. There is a vast difference whether it is getting milk containing from 3 to 4 per cent butter fat, or whether the milk he drinks contains twice that percentage—from 6 to 8 or (as occurs occasionally) 10 per cent butter fat since it is the butter fat mainly that yields the energy quotient or the required number of calories. Often an infant that takes the first three fourths of the milk, in the breast that is weaker in butter fat, refuses to take the last fourth that is much richer in butter fat, because in quantity it has taken all the liquid it can stand. It begins to thrive when the first fourth is pumped out of the breast. The infant gets then the last three fourths that is richer in butter fat. Some mothers worry because their child is getting little more than a pint a day, in spite of the fact that the child is well and gaining in weight. A large (8 or 10 per cent) percentage of butter fat explains.

The Trypanocidal Substance in the Blood—Grunmandel and Leichtentritt confirm the value of the content of the trypanocidal substance in children's blood as an index of the child's defensive forces at the moment. They report research in this line in keratomalacia, edematous conditions and scurvy.

Researches on Lipase, Diastase, Etc., in Nutritional Disturbances in Children—Hizume found the lipase within normal range in the blood serum and urine of undernourished children and in alimentary toxicosis but increased in rickets, as also in the stools. The values for diastase in the blood serum, urine and feces of normal infants are subject to considerable fluctuations, the same was true in undernourished subjects. In rickets the diastase in the urine was above normal in only two cases and in the stools in three. In infants with nephritis, the quantity of pepsin and erepsin in the urine was plainly increased.

Klinische Wochenschrift, Berlin

3 1425 1472 (Aug 5) 1924

*Xanthomatous Tumors E. Kirch—p. 1425

*Etiology of Typhus M. H. Kuczynski et al.—p. 1429

*Capillary Pressure H. Nevermann—p. 1433

*Technic and Biology of Roentgen Irradiation F. Heimann—p. 1436

*Experimental Pernicious Anemia R. Seyderhelm et al.—p. 1439

*Hyperglycemia in Hypertension S. Iwai and E. Lowy—p. 1440

*Fibrinogen and Platelets in Tuberculosis of Liver and Spleen H. Opitz and M. Silberberg—p. 1443

Chemical Contracture of Muscle O. Meyerhof—p. 1445

Chemical Contracture O. Riesser and N. Heizman—p. 1446

*Latency in Heart Muscle F. Schellong—p. 1447

*Anaphylatoxin from Dry Complement H. Dold—p. 1448

*Adsorption of Complement by Dyes F. Klopstock—p. 1448

Treatment of Myelogenous Leukemia Feilchenfeld and Peters—p. 1449

*Third Stage of Labor T. Heynemann—p. 1450

Thyroid and Thermoregulation P. Schenk—p. 1454 Conc n p. 1502

Xanthomatous Tumors—Kirch describes various neoplasms with accidental xanthomatous changes due to deposits of fat and especially esters of cholesterol in the cells. The origin of xanthomatous granulomas (in diabetes, etc.) is analogous. General hypercholesterolemia and local causes such as stasis of lymph, concur in the etiology of the deposits.

Etiology of Typhus—Kuczynski, Brandt and Maschbitsch report on the experiments they made in Omsk. They found the typhus less contagious and less grave than before. They cultivated the same proteus from lice containing rickettsia as they obtained from the brain of infected guinea-pigs. The cultures were negative with lice which did not contain rickettsia. They consider the problem of etiology of typhus solved in Weil's sense. *Proteus rickettsia provazii* is the agent.

Capillary Pressure—Nevermann found no increase of blood pressure in the capillaries in pregnancy. It is frequently higher in toxemias and especially eclampsia of pregnancy. The pressure in the capillaries is not parallel with the blood pressure.

Technic and Biology of Roentgen Irradiation—Heimann returns from strong to medium doses of roentgen rays. Operable cancers should be passed to the surgeon. Subsequent irradiation after extirpation of uterine cancer gave good results.

Experimental Pernicious Anemia—Seyderhelm, Lehmann and Wichels produced in dogs a stricture of the ileum about 5 or 10 cc from the ileocecal valve. Most of the dogs survived without signs of anemia. Bacteriologic examination showed that the ileum was practically as sterile in these animals as it is in normal dogs. Two of them developed within two weeks a hyperchromic anemia with megalocytes. They died within ten weeks. The ileum contained the same flora as the colon, a condition similar to that found in patients with pernicious anemia.

Hyperglycemia in Hypertension—Iwai and Lowy found in pure hypertension a normal glycemia and normal alimentary reaction to 20 gm of sugar. Only the azotemic patients had increased blood sugar and a diabetic alimentary curve.

Fibrinogen and Platelets in Tuberculosis of Liver and Spleen—Opitz and Silberberg describe the history of a child 2½ years of age, with jaundice, petechiae and edema. The blood aspirated from the heart ten minutes after death contained no fibrinogen and few platelets. Necropsy revealed tuberculosis of the lungs, spleen and especially of the liver.

Latency in Heart Muscle—Schellong found an extremely short period if any of latency of the electric response to stimuli of strips of heart muscle. The response to natural stimuli was stronger than to artificial 'threshold stimuli'. The research was aided by a Rockefeller Foundation grant.

Anaphylatoxin from Dry Complement—Dold was able to produce anaphylatoxin when using solutions of dried serum from guinea-pigs after incubation with prodigious bacilli. The symptoms were less grave than with fresh serum.

Adsorption of Complement by Dyes—Klopstock obtained adsorption of complement in a 0.1 per cent solution of night-blue and in 0.05 per cent solution of Congo red. The former dye is electropositive and the latter electronegative. Mixing the dyes with lipoids such as the Wassermann antigen increased their potency from ten to twenty-fold. Serum counteracts this phenomenon.

Third Stage of Labor—Heynemann recommends C. Schröder's and O. Kustner's signs of detached placenta. The former consists in the narrowing of the uterus and its rise above the navel together with a change of its round shape to a flat one. The latter sign is the lack of retraction of the cord by pressure with the finger-tips above the symphysis. Pituitary preparations may be injected before the placenta is detached. Ergot should not be used at this stage. Moderate bleeding may stop after injection of a pituitary preparation (preferably intravenous). Stronger bleeding requires compression of the aorta—best accomplished by Haselhorst's instrument. Only the bleeding from the introitus and clitoris is not checked by it.

Medizinische Klinik, Berlin

20 1063 1096 (Aug. 3) 1924

- Science of Nutrition E Remy—p 1063
 *Radiologic Diagnosis of Gastric and Duodenal Ulcer A Czapa—p 1068
 Hemopoietic Organs in Sepsis E Gimlinger—p 1073
 Barium Preparations C Wittkowsky—p 1076
 Iontophoresis in Dermatology J Sella and J Fenyo—p 1078
 Vaccine Treatment of Gonorrhea Orłowski—p 1079
 Serodiagnosis of Tuberculosis W F Winkler and H Gerth—p 1080
 Obstetrical Breviary F Eberhart—p 1082
 Milk Mixtures for Infants W Schmitt—p 1084 Cont'd

Radiologic Diagnosis of Gastric and Duodenal Ulcer—Czepa reviews eighty roentgenologically diagnosed cases of ulcer of the stomach or duodenum. The positive diagnosis was practically always confirmed by the surgeon.

Serodiagnosis of Active Tuberculosis—Winkler and Gerth found that neither the Wassermann, the Bonacorsi nor the Matefy reaction can demonstrate whether or not a tuberculous process is active. The last mentioned method has only a questionable value and the Bonacorsi was positive indiscriminately in health and in tuberculosis. Wassermann's reaction was never positive in health, but was negative in 25 per cent of the tuberculous patients. It sometimes became positive on the day following a tuberculin injection.

Monatsschrift für Geb. und Gynäkologie, Berlin

66 327 398 (July) 1924

- *Harelip and Polydactylism F C Lucker—p 327
 *Icterus Neonatorum K. Meier—p 337
 Polycystic Tumor of Broad Ligament W Nissen—p 339
 Carcinoma of Both Ovary and Appendix M Harnik—p 345
 Myoma of Vaginal Portion of Cervix E Guessaz—p 351
 Standardization of American Hospitals A Stein—p 359

Harelip and Polydactylism—Lucker emphasizes that harelip and polydactylism are hereditary malformations, and both may occur in one family. Polydactylism is endemic in a certain secluded village in which consanguineous marriages have been frequent.

Icterus Neonatorum—Meier points out that an increased hemolysis is not the only factor in jaundice of the new born. An insufficient development of the liver shares in the pathogenesis.

Monatsschrift für Kinderheilkunde, Berlin

28 289 384 (July) 1924

- Toxæmia in Infants S Rosenbaum—p 289
 *Symptoms of Tetany Following Diphtheria K Ochsenius—p 323
 *Bothriocephalus Anemia in Children S Grunmandel—p 325
 *Bacteriophage in Stools of New Born Surányi and Krüner—p 330
 *Pneumococcus Peritonitis in Dropsy B Schonfeldt—p 334
 Tuberculous Meningitis in Mongoloid Idiot Meseck—p 343
 Paratyphoid in Infants A Mendelssohn—p 348
 The Prevalence of Tuberculosis F Hamburger—p 355

Tetany in Diphtheria—Ochsenius witnessed the development of spasmodic, with laryngospasm in two infants aged 11 and 15 months, a week or ten days after subsidence of diphtheria under antitoxin treatment. No paralysis was noted in either case.

Bothriocephalus Anemia in Children—The anemia was of the pernicious type in the girl of 11, and hemolysis followed a large transfusion of blood. Then small amounts of blood from another donor were given daily for five days—a total of 350 c.c.—which improved the general condition to such an extent that treatment for the bothriocephalus could be applied, with prompt recovery.

Bacteriophage in Stools of the New-Born—There were no signs of lytic action in meconium. Four days was the earliest age at which bacteriophage action was manifest.

Pneumococcus Peritonitis—Schonfeldt calls attention to the stormy onset and rapidly fatal course of pneumococcus peritonitis in three children with severe dropsy, in contrast to the usual benign course in children free from dropsy. Comparison of these cases shows marked retention of sodium chlorid as a common factor and he queries whether the retained sodium chlorid has an influence on the proliferation of the pneumococcus.

Wiener klinische Wochenschrift, Vienna

37 771 792 (Aug. 7) 1924

- Body Proteins in Diseases W Berger—p 771 Cont'd
 *Early Diagnosis of Gastric Cancer F Schutz—p 775
 *Diverticula of the Duodenum M Haudek—p 776
 *Swallowing J Flesch—p 779
 Liver Atrophy and Dermatitis After Arsphenamin A Kirch—p 781
 *Surgery of Gastric Ulcer H Schur—p 782
 *Action of Iodine and Thymus on Respiratory Metabolism P Liebesny—p 783 Cont'd
 Heliotherapy in Austria A Kutscher and Archberger—p 785
 Procrin in Surgery F Mandl Supplement pp 116

Early Diagnosis of Gastric Ulcer—Schutz advises a complete examination of every patient with stomach disturbances of more than two weeks' duration. Anacidity with the presence of numerous short bacilli makes cancer probable.

Diverticula of the Duodenum—Haudek describes the history and roentgenologic findings in a woman with diverticula of the duodenum. The symptoms resembled chronic ileus.

Physiology and Pathology of Swallowing—Flesch discusses the physiology and pathology of swallowing. In affections of the tonsils, the 'empty' swallowing is most painful because the muscles of the tongue, palate and pharynx have to contract more in order to separate the oral from the pharyngeal cavity. Such patients have little discomfort if they fill the mouth with as much fluid (about 8 oz.) as it can hold. Then the head is bent slowly backward which causes occlusion of the larynx by the base of the tongue. After this, the whole of the fluid is swallowed at once without much pain. In other cases and in bulbar affections the nose may be used for feeding. Milk, and even semifluid foods passed through a fine sieve may be poured into the nostril in amounts of about 5 c.c., if the patient is lying on his back with slightly elevated head. The food has to be lukewarm, and it is well after feeding, to cleanse the nose with a few spoonfuls of a 1 per cent solution of sodium bicarbonate.

'Surgery of Gastric Ulcer'—Priority claim of Schur and Plaschke in principle of Finsterer's method.

Action of Iodine and Thymus on Respiratory Metabolism—Liebesny combines small doses of potassium iodide (from 1/4 to 3 mg, daily) with ingestion of thymus gland, preferably from young animals. He had good results in hyperthyroidism. The iodine was much better tolerated.

Zeitschrift für klinische Medizin, Berlin

100 363 654 (July 25) 1924

- *Oncotic Plasma Pressure and Edemas H Schröde and Claussen—p 363
 *Action of Calcium and Digitalis E Billigheimer—p 411
 *Water Metabolism in Diabetes O Klein—p 458
 *Sulphur of Blood in Cancer and Tuberculosis J Vorsechutz—p 478
 *Myogenic Leukocytosis A Egoroff—p 485
 Polycythemia Rubra with Eukemic Myelosis Von Winterfeld—p 498
 *Blood Metabolism in Pernicious Anemia A Sonnenfeld—p 508
 *Polychromatophilia J Kocman—p 517
 Pseudochylosus Effusions G Grund and H Jastrowitz—p 521
 *Colon Bacillus in Stomach in Pernicious Anemia Wichels—p 535
 Rhodin Content of Saliva F Lickint—p 543
 Blood in Menstruation G Holler et al—p 564
 Pernicious Anemia Versus Lymphadenosis Eisner and Mayer—p 582
 *Action of Tuberculin on Water Metabolism W Pockels—p 595
 Jolly's Bodies in Splenectomized Dogs J Weickel—p 608
 *Diuresis After Vital Stimulation L Prunz—p 623
 Thrombopenia and Essential Thrombopenia G Nagy—p 630
 Test of Vegetative System K Csepai—p 648

Oncotic Plasma Pressure and Edemas—Schröde and Claussen describe their apparatus which permits determination of the osmotic pressure (or, as they say, oncotic pressure, or Quellungsdruck) of plasma proteins within a few hours. The pressure varied around 25 mm of mercury in normal subjects, with fluctuations up to 4 mm each way. It was lower (down to 11 mm) in nephritis with edema. The figures were independent of the protein concentration and viscosity. Their experiments endeavor to prove that abnormally low osmotic pressure of the plasma colloids is the cause of renal edema with its predilection for the face and hands. Cardiac edema has a normal osmotic pressure of plasma colloids. They believe that the kidney regulates it.

Action of Calcium and Digitalis—Billigheimer found in man a close similarity between calcium and digitalis in respect to their point of action and the action itself. They

differ only in the duration of the effect. Each drug increases the action of the other.

Hormones and Water Metabolism in Diabetes After Insulin and Pituitary Extract—Klein found that water retention in the tissues occurs in the majority of diabetics following insulin injections. The water content of the blood remains unchanged or decreases slightly except after prolonged treatment. Extract of the posterior lobe of the pituitary prevents water secretion and causes hydemia with a brief increase in chlorids. In a case of pluriglandular insufficiency, insulin acted like pituitary extract. At the same time it failed to decrease the hyperglycemia and glycosuria.

Sulphur Content of Blood in Cancer and Tuberculosis—The percentage of total sulphur in the serum was about one-half lower than in the erythrocytes in Vorschutz's 500 tests. There were no differences between the blood from cancer and tuberculosis patients.

Myogenic Leukocytosis—Egoroff observed an absolute and relative lymphocytosis after physical exertion. Too hard effort caused lymphopenia and neutrophilia, with appearance of younger forms. The numbers of eosinophils, basophils and of lymphocytes with azurophilic granules decreased.

Blood Metabolism in Pernicious Anemia—Sonnenfeld's examinations of pernicious anemia patients again demonstrate the increased speed of blood destruction and the prognostic significance of the amount of urobilin in the feces.

Polychromophilia—Koopman attributes the polychromophilia to a deficiency in lipoids. Mixtures of cholesterol and lecithin remove preexisting polychromophilia as well as the artificial, produced in any blood smear within a few days by ether or alcohol. Basophilic stippling in a case of lead poisoning remained unchanged. He concludes that it has some other origin.

Colon Bacillus in Stomach in Pernicious Anemia—Wichels found the contents of the fasting stomach usually sterile in healthy subjects, also with ulcers and even in achylia. Many colon bacilli were present in almost every case of pernicious anemia and of cancer of the stomach.

Action of Tuberculin on Water Metabolism—Pockels injected intravenously various proteins in tuberculous children. This produced the same variations in hydemia as tuberculin. Subcutaneous injections of larger amounts of proteins cause blood changes in every healthy child.

Diuresis After Vital Staining—Paunz found an inhibition of secretion of water and solid substances after injections of a vital stain (water blue).

Zeitschrift fur Tuberkulose, Leipzig

40 321-400 (July) 1924

Refractivity and Viscosity of the Blood Serum in the Tuberculous

M. Gansslen and O. Maier—p. 321

Tuberculosis in Tropical Climate M. Heinemann—p. 324

The Abdomen Leg Defense Reflex A. Bogdanow—p. 329

*Leukocyte Count in Tuberculosis H. Schulte Tigges—p. 332

Pure Culture of Tubercle Bacilli from Sputum Y. Sumiyoshi—p. 338

*Bronchial Catarrh and Tuberculosis A. Schneider—p. 349

*Measles and Tuberculosis R. Wachter—p. 353

Leukocyte Count in Tuberculous Spontaneous Reaction—Schulte-Tigges points out that about the end or after a spontaneous tuberculous reaction, an increase of eosinophils often occurs following their decrease or disappearance during the reaction. He regards the serial leukocyte count as very instructive in tuberculosis.

Absence of Parallelism Between Catarrh and Tuberculosis—Schneider believes that the physical findings in pulmonary tuberculosis are due to a blending of specific changes in the lungs and to nonspecific changes in the bronchial mucosa. The catarrhal signs may come and go regardless of the specific lesions. Cured lungs may manifest signs of a profuse catarrh, which does not indicate an active or nonactive tuberculosis.

Measles and Tuberculosis—Wachter found a marked delay in sedimentation in tuberculous children for several weeks after measles, proving the inhibiting influence of the infection on immunity. The sedimentation test may thus give early warning of a menacing or beginning tuberculosis after measles.

Zeitschrift fur urologische Chirurgie, Berlin

15 227-328 (July 28) 1924

*The pH of the Urine in Functional Tests G. v. Pannwitz—p. 227

Cystic Kidneys G. B. Gruber—p. 246

*Bacteriology in Urogenital Tuberculosis E. Lowenstein—p. 255

*Foreign Body in Bladder P. Janssen—p. 260

*Influence of Diseased Kidney on Sound Mate Walthard—p. 263

Anomalies in the Kidneys B. E. Imberg—p. 315

Hypoplasia of Kidney with Cystic Degeneration Hueck—p. 322

Acid-Alkali Test of Kidney Function—Pannwitz' research has confirmed the wide fluctuations in the pH of the urine under the influence of food drugs and of nervous and emotional stress. In applying the SUA test, it is important to eliminate fluctuations due to these causes and this can be done by serial determination of the pH in the bladder urine. The test is made with substances natural to the organism. 20 drops of dilute hydrochloric acid is given by the mouth. The urine reaches the peak of acidity in the healthy in fifteen or thirty minutes. Then 50 cc of a 4 per cent solution of sodium bicarbonate is injected intravenously and the urine becomes alkaline, reaching the alkaline peak in ten minutes. The play of the ion metabolism thereafter is instructive for both diagnosis and prognosis.

Bacteriologic Diagnosis of Urogenital Tuberculosis—Lowenstein noticed that 40 per cent sulphuric acid or 35 per cent sodium hydroxide added to five times the amount of sputum destroys all the bacteria except the tubercle bacilli and these settle into the sediment. By this means he obtained pure cultures in 100 per cent of his specimens and was able to demonstrate that the tubercle bacilli discovered were non-pathogenic for guinea-pigs in two of his thirty cases. These two represented human cases of fowl tuberculosis; the clinical picture was that of mild sepsis with low morning and high evening temperature without positive physical findings in the lungs, the whole keeping up for years. The kidneys and the bone marrow are the favorite seats of the bacilli whence they pour into the blood without causing local suppuration or bleeding. Treatment with human tuberculin is naturally futile, but an avian tuberculin might have some chance of success.

Foreign Body in Bladder—The hard, round leather belt from a sewing machine had been worked into the bladder and the bladder had evidently responded with such vigorous contractions that the belt was twisted into a double knot. It proved impossible to relieve the young man except by a suprapubic incision. The case teaches the danger of attempting forcible extraction when a foreign body resists gentle traction.

Influence of Diseased Kidney on Sound Mate—Walthard induced aseptic resorption of devitalized kidney tissue in the left kidney of seventy-one rabbits, and found in all unmistakable evidence of toxic injury of the whole organism most pronounced in the sound kidney. The indigocarmine test failed in such a large proportion of the rabbits that a different mechanism of elimination from that in man seems plausible.

Zeitschrift fur Urologie, Leipzig

18 417-464 1924

*Cancer of Bladder in Anilin Workers C. Posner—p. 418

Surgical Treatment of Strictures of Urethra Stutzin—p. 422

Two Cases of Renal Hemorrhage Siedner—p. 425

Urine Formation in Relation to the Blood Armbruster—p. 433

Research on Urine Formation Armbruster—p. 439

Nec Arspenamin in Pyelitis in Women A. Matusovszky—p. 445

Milder in Nocturnal Enuresis A. Bauer—p. 452

*Congenital Cysts in the Kidneys G. Katz and E. Muhe—p. 453

Cancer of Bladder in Anilin Workers—Posner discusses the fact that workers who deal with anilin are more than others affected with cancer of the bladder. The first symptoms may not appear until many years after abandoning the occupation. He believes that anilin not only causes hemolysis, but acts in some way directly on the bladder. Experimental research has been constantly negative, and metastasis in the bladder has never been reported with tar cancer.

Congenital Cysts of the Kidney—Katz and Muhe, referring to two cases, say that the congenital cystic kidney can clinically hardly be differentiated from a renal tumor or renal sclerosis. The disease is hereditary, affects usually both kidneys, and the cysts are multiple. The chief symptoms are

a paroxysmal, persistent hematuria, hypertonia, and finally uremia. In one instance, in which one kidney was removed, the patient recovered, although a cerebral hemorrhage occurred eight years after the operation. The woman's blood pressure was 175 mm of mercury at this time but she recovered and is still in satisfactory condition two years later except for rare slight hematuria.

Zentralblatt für innere Medizin, Leipzig

45 633 664 (Aug 9) 1924

*Action of Insulin on Chemical Reduction. C. Becker—p. 634
Survey on Rhinology. O. Seifert—p. 637

Action of Insulin on Chemical Reduction.—Becker added six units of insulin to 1 cc of a 20 per cent solution of glucose. This solution reduced 1 cc of gamma dinitrophenol solution after addition of 25 per cent ammonia much quicker than the control without insulin. No living tissue was needed to produce this effect.

Casopis lekaruv ceskych, Prague

63 1197 1224 (Aug 9) 1924

*Theory of Kidney Function Tests. V. Laufberger—p. 1197
*Spina Bifida. O. E. Schulz—p. 1203
*Bacteriology of Ozena. H. Greif—p. 1208
*Drosera Rotundifolia. J. Koloušek—p. 1215

Theory of Kidney Function Tests.—Laufberger criticizes the theoretical foundations of the functional diagnosis of disease of the kidneys. He would prefer a complete separation of the anatomic diagnosis of gross changes of the organs where it is feasible, from the physiologic diagnosis of general functions, as for instance, water metabolism. The latter depends not only on one organ (kidneys) but also on the other tissues. A synthesis of both view points may come later.

Spina Bifida.—Schulz concludes his study on occult spina bifida and its relation to deformities of the lower extremity. He finds that it is a quite frequent cause.

Bacteriology of Ozena.—Greif found Perez-Hofer-Shiga's bacillus not only in genuine ozena but also in ozena of syphilitic and mechanical origin. Inoculations in rabbits produced changes which did not resemble the human affection. The serum of patients agglutinated the bacilli only in high concentrations (1:10). He concludes that the results of vaccine therapy are due to a nonspecific protein effect. Ozena is a nosologic but not an etiologic entity.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

2 479 614 (July 26) 1924

Haldane's Carbon Dioxide Tension Apparatus in Estimation of Ventilation of School Rooms. Leopold—p. 480
*Irritations in Production of Cancer. H. T. Deelman—p. 489
Experiences with Tuberculin. H. J. van der Weij—p. 495
Mydiopters. G. J. Schoute—p. 504
*Local Treatment with Cod Liver Oil. Andrae and van Brero—p. 511
*Recent Research on Cerebellum. G. van Rijnberk—p. 516

The Cumulative Action of Cancer-Producing Irritations.—Declman comments on the remarkable similarity of the figures representing the number of applications of tar required before the first signs of visible change in the tissues became manifest in his seven series of fifteen white mice each. The figures were 22 when the tar had been applied at intervals of two days, 18, three days, 19, four days, 17, five days and six days, and 18 seven days. The cancer producing influence proceeded inexorably in its work even when in the long intervals the skin seemed to have recuperated completely between the tar applications, so that the area had to be shaved anew each time. With the shorter intervals, the hair never grew. The irritation inducing cancer formation is thus independent of the rhythm of application of the irritation. His research showed further that in each series the tissue changes, once installed, assumed a malignant aspect in from fifty to sixty days—an almost constant interval notwithstanding that the total period of applications ranged from forty-four days to 140 days. It is evident he says that the tissue changes depend on the summation of the irritations but also that when this cumulative effect has reached a certain point, the malignant transformation proceeds inexorably regardless of the continuance of the irritation. In human cancer, the

irritation may have escaped attention or been forgotten when the physician first sees the cancer.

Cod Liver Oil in Local Treatment of Tuberculous Abscesses.—Of the thirty-one children treated in this way at a seashore sanatorium, twenty-three showed marked improvement or the abscess or fistula healed completely. Bismuth or iodoform was combined with the cod liver oil. The eight refractory cases were all extremely grave and of years' standing.

Recent Research on the Cerebellum.—Van Rijnberk reproduces twenty-three illustrations to accompany his analysis of the works of different recent writers on structure and localization in the cerebellum.

2 615 738 (Aug 2) 1924

Malaria in Surinam. C. Bonne—p. 616
*Vaccination by Mouth Against Cholera. P. Peverelli—p. 633
Mechanical Aids for the Deaf. H. Zwaardemaker—p. 641
Syphilitic Jaundice One Month After Infection. Bottema—p. 653
History of Incisions for Calculi. A. J. van der Weijde—p. 655
History of Amber in Medicine. M. A. van Andel—p. 666

Vaccination by the Mouth Against Cholera.—Peverelli saw no influence on normal rabbits from large amounts of living or killed cholera vibrios given through the stomach tube. But if a bile pill had been given previously, this seemed to render the digestive tract permeable and production of antibodies followed. The intestinal wall displayed a potent bactericidal action when the vaccination was thus rendered possible by the bile or the vibrios were injected by the vein. The vaccination of the rabbits was so effectual that most of them bore without harm intravenous injection of an otherwise lethal amount of vibrios. A group of seven volunteers took fasting a bile pill and a tablet of desiccated vibrios and their blood showed a marked increase of antibodies thereafter while this occurred only in one in a similar group who did not take the bile pills. He cites nine writers who have published favorable experiences with vaccination by the mouth against typhoid, dysentery or cholera.

Acta Chirurgica Scandinavica, Stockholm

57 1 192 (July 12) 1924

Classification of Fractures of Upper Portion of Femur. R. Faltn—p. 1
*Treatment of Fractures of Neck of Femur. Idem—p. 10
*Idem. U. Lindgren—p. 55
Perforation Peritonitis. L. Schonbauer—p. 103
Subphrenic Bile Peritonitis Without Perforation. Kallmark—p. 169
Extradural Spinal Abscess. A. Westerborn—p. 182

Fractures of the Neck of the Femur.—The three articles on fracture of the neck of the femur are in English. Faltn protests against the prevailing pessimistic conception of these fractures saying that when a medial fracture fails to heal this is due to inadequate apposition and retention of the fragments and not to the poor blood supply. A vein must be allowed for the healing. Lindgren declares that fracture of the neck of the femur requires institutional treatment, the medial fractures without exception under repeated roentgen control. No weight should be borne on the leg for at least six months. He gives eight large tables with the particulars and outcome in 100 cases most of them reexamined from one to five and a half years later. The outcome in another group of eleven operative cases is also reviewed. Both Faltn and Lindgren extol Whitman's abduction method as the routine procedure for recent fractures.

Perforation Peritonitis.—Schonbauer analyzes the cases and outcome at the Eiselsberg clinic in the last fourteen years. Pepsin with a digestive potency of 1:3,000 was used in making the "hydrochloric acid pepsin" with which the infected peritoneum was rinsed in several groups of cases. Necropsy in two of the thirty-two postappendicitis cases treated with the pepsin revealed almost complete healing of the diffuse peritonitis seen at the operation two or three days before. A third necropsy in a diabetic showed that the peritonitis had not been influenced at all by the biologic antiseptic. In one at least of the seven cases of peritonitis from perforation of an ulcer the pepsin seemed to have had a life-saving influence. In another much debilitated patient with moderate glycosuria, it is possible that a less tedious operation, with out rinsing, might have saved the young man who died twenty hours after resection of two thirds of the stomach and part of the duodenum.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL 83, No 12

CHICAGO, ILLINOIS

SEPTEMBER 20, 1924

A NEW DIET FOR PEPTIC ULCER*

WARREN COLEMAN, MD

NEW YORK

Whatever may be the causes that initiate the pathologic processes of peptic ulcer, the ultimate cause is the digestion of circumscribed devitalized areas of the gastric or duodenal wall

After its development, the chief sources of injury to the ulcer are (1) the chemical action of the digestive juices and (2) the mechanical irritation from peristalsis and unselected foods

As with ulcers elsewhere in the body, protection from injury is the first therapeutic consideration, the second is maintenance of the patient's nutrition. Since the location of the peptic ulcer imposes limitations on the procedures that may be employed for its cure, the problem confronting the physician is essentially dietetic in character¹

The ideal procedure would be to put the stomach at absolute rest. But rectal and parenteral feeding have not yet been brought to the required state of perfection. Food must be given by mouth²

Probably in every case of peptic ulcer, at least during some part of its course, the acidity of the gastric juice is abnormally high, and its secretion unduly prolonged. It is also probably true that the most annoying symptoms of peptic ulcer (in the absence of deformity of the stomach or duodenum) are due to actual or relative hyperacidity, or were initiated by it. An interesting analogy is to be found in one of Pawlow's³ dogs

A round ulcer formed in the gastric culdesac, which steadily increased in size, gave rise from time to time to violent bleeding, and finally, after perforation of the stomach wall, produced a secondary peritonitis. During the development of the ulcer, a continuous and increasing hypersecretion was observed, the flow finally exceeding the normal by three or four times.

The secretion of the first hour departed in no way from the normal, but in the second it remained at its previous height, instead of dropping to about one half. In the succeeding hours also the secretion was considerably greater than normal.

THE VICIOUS SECRETORY CIRCLE

Pawlow explains this departure from normal in the secretory processes of the stomach as due to increased

excitability of the centripetal nerves or their nerve endings in the mucous membrane, resulting from the presence of the ulcer. This observation of Pawlow's, together with the symptomatology of typical cases of peptic ulcer, suggests the establishment of a vicious secretory circle when patients follow their usual dietetic habits. The action of "stomachics" in ulcer cases lends support to this view. And, conversely, when the vicious circle is broken, the symptoms of peptic ulcer disappear, though the frequent return of symptoms after varying intervals, indicates that the ulcer has not healed. As is well known, such cycles repeat themselves from time to time in the course of peptic ulcer.

The problem therefore consists in the arrangement of a diet that will give the stomach the maximum amount of secretory and motor rest while at the same time it supplies the patient with sufficient food to cover his daily energy expenditures.

Numerous diets have been arranged for peptic ulcer, and several of the most typical of them may be examined critically to ascertain the extent to which they conform to the foregoing requirements. It may be mentioned in passing that Einhorn⁴ seeks the solution of the problem in his method of duodenal feeding, and reports good results from its use.

THE LENHARTZ DIET⁵

On the first day, only 200 c.c. of milk and two eggs are allowed. These are increased gradually, until, at the end of the first week, the patient is receiving 900 c.c. of milk and eight eggs. Sugar (20 gm.) is added to the diet on the third day, and increased to a total of 50 gm. on the ninth day. Scraped meat (35 gm.) is added on the sixth day, and increased to 70 gm. on the day following. Rice is allowed on the seventh day, zwiebach on the eighth day and butter on the tenth day.

Beginning with 280 calories a day, the energy value of the diet rises to 2,138 calories by the ninth day and to 3,073 calories by the fourteenth day. The proportions of the several foodstuffs on the ninth day are, approximately, protein, 130 gm., fat, 75 gm., and carbohydrate, 200 gm.

It is obvious that, after the first week, the Lenhartz diet does not differ greatly from the average normal diet except in the selection of foods and the relative excess of protein.

THE SIPPY DIET⁶

Sippy recommends the administration of 3 ounces (90 c.c.) of equal parts of milk and cream every hour from 7 o'clock in the morning to 7 o'clock at night. Eggs, crackers, bread and butter and cereals (rice, oatmeal and farina) gradually are added to the diet, and,

* From the Department of Medicine University and Bellevue Hospital Medical College and the Third Medical Division of Bellevue Hospital.

¹ The use of drugs and the indications for surgical intervention do not come within the scope of the present discussion.

² Nutrient enemata cannot be discussed at length at this time but it may be pointed out that native and partially digested proteins are not absorbed from the large intestine, however in a carefully controlled experiment on a volunteer who had gone without food for several days I found that amino-acids are readily absorbed. It is doubtful whether fat is absorbed from the large intestine. Glucose is readily absorbed.

³ Pawlow I. P. The Work of the Digestive Glands Philadelphia, J. B. Lippincott Company 1910.

⁴ Einhorn M. Rec. 78 92, 1910.

⁵ Lenhartz Deutsch med. Wchnschr. 30 412, 1904.

⁶ Sippy B. W. Diseases of the Stomach in Musser and Kelly's Practical Treatment, Philadelphia W. B. Saunders Company 3 336 1912.

still later, custards, creamed soups, vegetable purees, jellies and marmalades

By the end of the first week, the patient is receiving approximately 65 gm of protein, 135 gm of fat and 100 gm of carbohydrate daily, with an energy value of some 1 800 calories

Every hour, midway between the feedings, and every half hour for four or five doses after the last feeding, the patient is given a powder containing 10 grains (0.6 gm) each of heavy magnesium oxid and sodium bicarbonate, alternating with a powder containing 10 grains (0.65 gm) of calcium carbonate and 30 grains (2 gm) of sodium bicarbonate

The striking features of the Sippy diet are the frequency of the feedings, the preponderance of fat and the use of alkalis to neutralize the hydrochloric acid. While under this diet the nutrition of the patient is maintained and strongly acid chyme never reaches the ulcer, the stomach is kept in a state of constant activity for twelve of every twenty-four hours

SMITHIES DIET⁷

Although the Smithies diet was not published until five years after I had begun the use of the diet here advocated, it seems advisable to consider it in this connection

For from three to seven days, depending on the persistence of the gastric distress, Smithies gives by mouth one-half ounce (15 cc) of warm water every hour while the patient is awake and, occasionally during the day, orange juice and the juice of grapefruit. During this period, enemas consisting of 50 per cent alcohol 1 ounce (30 cc), glucose 1 ounce (30 gm), and physiologic sodium chlorid solution, 240 cc, are given every four hours by the drip method. For the first day or so, 10 drops of tincture of opium is given with each enema. The number of enemas is reduced when feeding by mouth is begun, they are discontinued on the fifth day thereafter. On the third to the seventh day, gruels made of rice, wheat oatmeal, sago, cornmeal, etc., are given by mouth in quantities of from 4 to 6 ounces (120 to 180 cc). From the fourteenth to the twenty-first day, barley water, zwiebach, butter, milk and boiled milk, puddings, custards, purees, Salisbury steak and eggs are gradually added to the menu. One ounce (30 cc) of warm water, or orange juice or grapefruit juice is allowed whenever desired throughout the treatment. This diet is continued for from six to seven weeks.

The quantities of the various foods are not stated with sufficient definiteness to permit calculation of the energy value of the diet on particular days, yet, from the selection and preparation of the foods, it is improbable that the patient receives as much energy as from the Lenhartz and Sippy diets until in the third week of treatment. For the same reason, the proportions of the individual foodstuffs cannot be computed.

COMMENTS ON THESE DIETS

Each of these authors sought, in arranging his diet, to give the greatest possible protection to the ulcer, while maintaining the patient's nutrition. In each instance, the foods were carefully selected, and foods that are notoriously difficult to digest, or with potentially harmful residues, were excluded from the menu. And the quantity of food permitted at any one time was limited.

The Smithies diet allows the stomach complete preliminary rest except for the occasional administration

of raw fruit-juices, which are prohibited by the majority of practitioners because of their acidity. The diet is built up on the premise that carbohydrates require no digestive effort on the part of the stomach, and pass quickly into the duodenum. But the principal foods of the diet are not simple carbohydrates, they contain protein in not inconsiderable percentages—rice contains 8 per cent protein, wheat 10 per cent and oatmeal 16 per cent. They are, therefore, mixtures of foodstuffs, and their influence on the digestive processes must be compared with that of bread. From the investigations of Pawlow, we know that bread requires for its digestion a longer time than meat, that the flow of gastric juice is correspondingly prolonged, and that the total quantity is greater. The acidity of "bread-juice," however, is lower than that of meat, but its digestive power (ferment content) is three times as great. Therefore, from the standpoint of the amount of work demanded of the stomach, gruels made of rice, wheat and oatmeal cannot be considered as easy of digestion. This is due primarily to the presence of the protein, and to the fact that vegetable protein is very difficult to digest. Further objection to the Smithies diet lies in the frequency of the feedings, the stomach is permitted neither secretory nor motor rest for twelve hours of each day after feeding by mouth is started.

The Lenhartz diet gives the stomach partial rest for somewhat more than a week. Thereafter, the diet is comparable to the average normal diet, except in the variety of foods. The excess of protein—130 gm a day—is objectionable, at least theoretically, because of its tendency to establish a vicious secretory circle. Though protein actively combines with hydrochloric acid a large quantity of strongly acid gastric juice is required for its digestion and by analogy with Pawlow's dog, its secretion is prolonged beyond the immediate needs of the meal.

The effects of the Sippy diet on the secretory activity of the stomach cannot be stated, because data are lacking. The secretion as a whole is probably greatly diminished by the excess of fat (135 gm a day) and by the sodium bicarbonate. If any hydrochloric acid is secreted, it is neutralized, and it seems probable that no digestion whatever occurs in the stomach. In this respect the Sippy diet is comparable to duodenal feeding. The ulcer is completely protected from chemical injury, but the hourly administration of food keeps the stomach in constant motor activity.

In spite of theoretical objections, good results have been reported from the use of these diets. And yet the question presents itself, whether it is not possible to arrange a dietary which will more nearly fulfil the indications for treatment. The digestive responses to certain foods possess therapeutic possibilities in cases of ulcer, but in none of the foregoing diets has this principle found expression.

As has been stated, the sources of injury to the peptic ulcer may be grouped as chemical and mechanical. Both kinds of injuries are incident to the digestive activities of the stomach. The problem, therefore, becomes one of selecting foods which do not excite the gastric secretion and which least stimulate the motor activity of the organ. Pawlow has demonstrated that such foods exist.

A NEW DIET

Selection of Foods—Fats. Fats not only are not digested in the stomach, but, when taken with other foodstuffs, diminish or delay the gastric secretion, they are capable even of inhibiting the powerful psychic

impulse. Fats leave the stomach slowly, and thus form a protective coating over the ulcer. The food habits of the Eskimos and, Pawlow states, of certain Russians, indicate that the stomach tolerates large amounts of fat, and Newburgh and Marsh⁸ have proved that there is no danger of acidosis from an excess of fat, even when carbohydrate is reduced to a minimum. It need scarcely be added that the fat should be pure and that it should not be given with other foodstuffs.

The most suitable fats for the ulcer diet are olive oil and butter fat. The butter should be fresh and unsalted, if there is any probability of its containing more than a trace of butyric acid, the butter should be washed several times in water, since butyric acid is a powerful excitant of gastric secretion. Yolk of egg and cream are less desirable forms of fat because both contain protein, but experience has shown that they may be used late in the treatment without causing a return of symptoms.

Fat must be depended on to furnish the greater portion of the energy of the diet.

Protein. White of egg, when given alone, or with a small quantity of water or lightly boiled, does not excite the gastric secretion. It is digested in the stomach only when gastric digestion has been initiated by some other food or by the psychic impulse, and passes quickly into the duodenum. White of egg may therefore be selected to furnish the protein of the ulcer diet. The amount of nitrogen need only slightly exceed the nitrogen minimum, that is, from 3 to 5 gm a day. This amount is provided by the whites of from six to eight eggs.

Carbohydrate. As has already been pointed out, the commoner, so-called carbohydrate foods, the cereals, are mixtures of starch and protein. Their digestion is difficult and prolonged. And pure carbohydrates, such as the sugars, are apt to undergo fermentation in the stomach. For these reasons, it is desirable to give no carbohydrate by mouth, but to give glucose by rectum. Glucose is readily absorbed from the large intestine, but it has been found expedient to give not more than from 90 to 100 gm a day.

Salt. Sodium chlorid is added to the glucose enemas to prevent loss of chlorin from the body.

Water. The greater portion of the water required may be given by rectum. If thirst is not controlled by the enemas, moderate quantities of water may be allowed by mouth whenever desired. Water excites the gastric secretion only when given in large amounts at a time.

Based on the foregoing considerations, the diet that I wish to recommend for peptic ulcer consists only of olive oil or butter fat, white of egg, glucose, salt and water. The white of egg and fats and a moderate quantity of water are given by mouth, the glucose and salt are given in solution by rectum. In order to secure complete rest for the stomach, only water is permitted by mouth for several days. In the earlier part of the treatment, both in the preliminary period and after feeding by mouth is begun, the patient does not receive the amount of food he needs, but when the totals of the various foods have been reached, the nutritive requirements of the body are completely covered. Thus

Five ounces (150 cc) of olive oil (or about 6 ounces [180 gm] of butter) furnish approximately 1,400 calories.

The whites of eight eggs contain 33 gm of protein (5 gm of nitrogen), and furnish 135 calories.

Four ounces (120 gm) of glucose furnish 480 calories.

Eight grams of salt will prevent loss of chlorin from the body.

On such a plan, the stomach may be given absolute rest for from three to five days. The foods given by mouth inhibit the gastric secretion and reduce gastric motility to a minimum, the surface of the ulcer is protected by a coating of fat for a considerable portion of each day. Another important consideration is that perhaps much of the benefit that follows the preliminary rest results from the breaking of the suggested vicious secretory circle.

The only criticism that may be made of the diet from the standpoint of the nutritional requirements of the body is the preponderance of fat. This question has already been discussed.

Procedure.—The patient is put to bed to minimize the effect of exercise on gastric motility, to lower his metabolism, and to assist in retaining the enemas. Before treatment is begun, the alimentary tract should be cleared with castor oil or some other laxative.

For from three to five days, depending on the ability of the patient to withstand partial starvation, no food whatever is given by mouth. If thirst is not controlled by the enemas, small quantities of water, from 1 to 3 ounces (from 30 to 90 cc) at room temperature, or warmed, may be allowed whenever desired. Cracked ice may be held in the mouth unless the water that is swallowed provokes pyloric spasm.

The Enemas. The glucose enemas are begun on the first day of treatment. They consist of glucose (30 gm) in 300 cc of physiologic sodium chlorid solution. Each morning, before the first nutrient enema, the rectum and sigmoid should be emptied by an enema of soap-suds or sodium chlorid solution (0.7 per cent). The glucose solution is given, hot, from a vacuum bottle by the drip method at a rate that consumes from half to three quarters of an hour. Three or four such enemas are given daily, equally spaced throughout the sixteen waking hours.

Experience has taught that the average patient readily tolerates a 10 per cent solution, a few patients are able to retain a 12 per cent solution, in some, the strength must be reduced to 7 per cent. Intolerance of the enema manifests itself in painful intestinal cramps, though the solution is not always immediately expelled. When cramps occur, the strength of the solution must be reduced, or the number of enemas restricted. The enemas are continued throughout the treatment.

Food by Mouth. On the fourth to the sixth day, feeding by mouth is begun. The only foods permitted are white of egg and olive oil or butter fat. The schedule of feedings should be so arranged that the white of egg and fat are given at different hours, to prevent the delay that fat causes in the passage of the albumin from the stomach. The intervals between the feedings should be made as long as may be feasible, they should not be less than two hours. The total quantity of food should be increased as rapidly as the stomach can take care of it in order to control the loss of weight. The total amount given at any feeding need never exceed 3 ounces (90 gm), it does not always reach that.

For practical reasons, olive oil is the fat of choice for the average patient. From 1½ to 2½ ounces (45 to 75 cc) may be given the first day. It should be given clear, it is taken more easily when it is chilled. The whites of from three to four eggs may be given

⁸ Newburgh, L. H., and Marsh, P. L. Use of High Fat Diet in Treatment of Diabetes mellitus. Arch. Int. Med. 26: 647 (Dec.) 1920.

the first day, thoroughly mixed with a small quantity of water, or whipped to a foam or lightly coddled. If desired, the white of egg may be prepared differently for each feeding, a pinch of salt may be added. As treatment progresses, the quantity of oil is increased to a maximum of 150 c c, and the whites of egg to a total of six or eight.

With some patients, olive oil palls on the taste, and much or all of it must be replaced by some other fat. In such instances, unsalted butter may be employed in corresponding amounts. Unless perfectly fresh, the butter should be washed in water several times to remove any butyric acid that may be present. The butter may be given melted or cold, and a pinch of salt may be added before taking.

For the sake of variety, yolk of egg may be substituted for a portion of the olive oil or butter fat in the proportion of one yolk to about one teaspoonful of the oil or butter. The yolk and the white of egg should not be given together. The yolk may be heated through, but should not be cooked hard. A little sweet butter and salt may be added.

Occasionally, a patient will rebel against all the fats mentioned, and cream must be substituted for them. Twenty-three ounces (690 c c) of cream is required to replace 5 ounces (150 c c) of olive oil. But cream is not as desirable as olive oil and butter fat because it calls forth a weak gastric secretion, and is not capable of exerting the same demulcent action on the raw surface of the ulcer.

This diet should be continued for from three to four weeks, and, as after other diet cures, only specially selected foods should be allowed for many months.

Results—All patients lose weight in the earlier part of the treatment because the amount of food is insufficient to cover their nutritive requirements. The extent of the loss depends on the length of time occupied in reaching the desired totals. Consequently after feeding by mouth is begun, the food should be increased as rapidly as the stomach can take care of it. Usually the lost weight is recovered before the patient is ready to leave the bed. If the loss of weight in any patient appears dangerously rapid, the diet should at once be modified by the addition of suitable quantities of cream and whole eggs to prevent further loss. Loss of weight will be greater if thirst is not controlled.

Gastric distress quickly subsides after treatment is begun, it may disappear on the first day, and is nearly always gone by the third day. I do not recall an instance in which it has been necessary to seek the aid of drugs to relieve the distress.

SUMMARY

1 In a new diet, recommended for the treatment of peptic ulcer, glucose-salt enemas are given throughout and, for the first three to five days, only water is allowed by mouth.

2 Feeding by mouth is started on the fourth to the sixth day. The only foods permitted are olive oil or butter fat and white of egg. Later in the treatment, yolk of egg and cream may be added to the diet in replacement of a portion of the other fats.

3 The diet has been in continuous use for twelve years and the results have proved satisfactory.

59 East Fifty Fourth Street

THE RESULTS OF TRYPARSAMIDE THERAPY IN SYPHILIS*

JOSEPH EARLE MOORE, MD

HARRY M ROBINSON, MD

AND

RICHARD S LYMAN, MD

BALTIMORE

The encouraging results of tryparsamide therapy in neurosyphilis reported by Lorenz, Loevenhart and their collaborators,¹ and by us,² have been confirmed by further experience. We are now able to present the results of treatment in 195 patients, of whom 133 are neurosyphilitic, observed during the last four years.

RESULTS IN EARLY AND TERTIARY SYPHILIS

The favorable effect of tryparsamide in neurosyphilis is, as we have pointed out,² in paradoxical contrast to the comparatively poor results obtained in early or late syphilis without nervous system involvement. That the drug is not a powerful spirocheticidal agent is emphasized by the failure of repeated large doses, as large as 7 gm each, to heal lesions, or to cause the disappearance of surface organisms, in ten cases of primary or secondary syphilis, though a single subsequent injection of arsphenamin invariably brought about prompt healing. The power of tissue penetrability possessed by the drug invited its thorough trial in tertiary syphilis, especially the cardiovascular type. We have treated fifty-two patients with late syphilis who presented no clinical or laboratory evidence of nervous involvement, including nine with cutaneous syphilids, six with gummatous lesions elsewhere than the skin, thirteen with cardiovascular syphilis, and nineteen with no demonstrable lesions but with persistently positive blood Wassermann reactions. In five late cases, the drug was employed solely for its nutritional effect. Visible tertiary lesions were healed slowly or not at all, though subsequently all were rapidly influenced by arsphenamin. Anginal pain, dyspnea, cough or other symptoms of cardiovascular syphilis were inconstantly affected, but the results were not as favorable as in a comparable group treated with the arsphenamins and mercury. There was also almost no effect on the blood Wassermann reaction in these fifty-two patients. This relatively slight therapeutic response, coupled with the danger of visual impairment from tryparsamide, has led us to abandon its use in all types of syphilitic infection except neurosyphilis.

In neurosyphilis, we administer tryparsamide in weekly intravenous injections, in an average adult dose of 3 gm (from 30 to 50 gm per kilogram). A course comprises from eight to sixteen injections. We have so far purposely avoided the use of any other drug in immediate combination with tryparsamide, in order to obtain clear cut evidence of its value. In the interval of from two to four months between courses however, an arsphenamin, mercury or bismuth is given. A blood Wassermann test is performed at the time of each

* This investigation has been partially supported by a grant from the Rockefeller Institute for Medical Research.

¹ From the Syphilis Division of the Medical Clinic and the Phipps Psychiatric Clinic, the Johns Hopkins Hospital.

² Read before the Section on Nervous and Mental Diseases at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

¹ Lorenz W F, Loevenhart A S, Bieckmann W J and Hodges F J. The Therapeutic Use of Tryparsamide in Neurosyphilis. *J A M A* 80: 1497 (May 26) 1923. Lorenz W F, Loevenhart A S, Reitz T F and Eck C P. The Use of Tryparsamide in Neurosyphilis. *Am J M Sc* 168: 157 (Aug) 1924.

² Moore J E, Robinson H M and Keidel Albert. Tryparsamide in the Treatment of Syphilis. *J A M A* 82: 528 (Feb 16) 1924.

Sight Conservation Classes—There are 180 sight conservation classes in the public schools of the United States. New York City has the largest number of classes—fifty—*Am J Ophthalmology*, July, 1924.

intravenous injection, and, when possible, the spinal fluid is examined (cells, globulin, Wassermann titration, and colloidal gold and mastic tests) before and after each course of tryparsamide

RESULTS IN NEUROSYPHILIS

The results obtained in 133 neurosyphilitic patients are presented in tabular form. We have divided our material into five groups, two of which require definition. Under the heading "asymptomatic general

TABLE 1—Clinical Results from Tryparsamide Therapy

Type of Neurosyphilis	Number of Patients Reported On	Clinical Result					
		Well Re-mained	Arrested Re-Symptoms Cleared Up	Im proved	Unlm proved	Worse	Dead
General paralysis and taboparalysis	40	4	9	10	8	4	5
Asymptomatic general paralysis	17	17	—	—	—	—	—
Tabes dorsalis	24	6	6†	4	6	1	1
Asymptomatic neurosyphilis Group 2	15	13	8‡	—	—	2‡	—
Meningovascular	37	13	—	12	2	—	2
Total	133	53	23	26	16	7	8
Per cent of total		39.8	17.2	19.5	12.0	5.2	6.0

* Remission of mental symptoms

† Disappearance of crises lightning pains etc

‡ Recurrent secondary syphilis during tryparsamide

§ Cranial nerve palsies, headache etc. cleared up

paralysis" are included those patients whose spinal fluids disclose the general paralytic formula (high cell count, strongly positive globulin reaction, Wassermann fixation with 0.1 c.c. of fluid or less, and general paralytic colloidal curves), though neurologic and psychiatric abnormalities are lacking. These persons have usually had syphilis for years, and, in our experience, are likely to develop general paralysis if not treated.³ As "asymptomatic neurosyphilis, Group 2," we class patients, usually recently infected, who are found to have moderately positive spinal fluids (slight pleocytosis and globulin increase, Wassermann reaction positive with 0.4 c.c. of fluid or more, and colloidal tests usually of the syphilitic zone type).³ There is ordinarily no clinical evidence of neurosyphilis in this group, though we have arbitrarily included two patients with typical neurorecurrences. The group of "meningovascular neurosyphilis" includes various types of diffuse cerebrospinal syphilis.

The clinical results, summarized in Table 1, are to some extent obscured by the fact that twenty-four patients with general paralysis, sixteen patients with tabes, and thirty-three patients with meningovascular neurosyphilis had been intensively treated just prior to tryparsamide therapy. The duration of this previous treatment ranged from a few months to five years. As a net clinical result, four of the cases of general paralysis, six of the cases of tabes, and thirteen cases of the meningovascular group were clinically arrested at the time tryparsamide was begun, though in every instance serologic improvement had been slight or absent. In these arrested cases, and in the thirty-two cases of asymptomatic neurosyphilis, the clinical effect of tryparsamide therapy cannot be estimated, except to point out that there were no relapses.

Our estimate of the clinical effect of tryparsamide is based on the results obtained in seventy-eight neurosyphilitic patients, of whom twenty-nine had not been

previously treated, and forty-nine had received prior treatment, without complete relief of symptoms.

Among these were thirty-six patients with general paralysis. In this group, remission of all mental symptoms has occurred in nine, and ten are markedly improved. The duration of remissions ranges from a few months to three years, permitting fourteen patients, all with early general paralysis, to return to useful occupations. Twelve patients with advanced longstanding general paralysis are either unimproved or worse. There were five deaths, one by suicide, two from acute infections in patients with unimproved late general paralysis, and two from general paralysis. The last two patients remained well, for two and three years, respectively, after a single course of tryparsamide, plus several courses of arsphenamin, finally suddenly becoming psychotic, and dying within a few weeks.

As with other methods of treatment, clinical and serologic improvement do not necessarily parallel each other, as shown by two patients with general paralysis in whom the spinal fluid became completely negative, though the clinical course was progressively downhill. Conversely, in several instances marked clinical improvement has occurred, while the spinal fluid changes have been relatively uninfluenced.

Lightning pains and gastric crises were improved in three and completely relieved in six of eighteen patients with tabes. In some of these, previous intensive treatment had failed to bring about relief. At the beginning of tryparsamide treatment, these manifestations may be temporarily exacerbated after each injection. In one instance, a Charcot knee has improved during tryparsamide treatment. No definite effect on ataxia has been apparent. The remaining eight patients with tabes, five with crises or lightning pains, one with complete optic atrophy, one with a tabetic bladder, and one with bilateral nerve deafness, are unimproved. A single death was by suicide.

The most striking clinical results are obtained in the meningovascular group. There are twenty-four patients in this group, in all except four of whom such symptoms as headache, vertigo, convulsions, and cranial

TABLE 2—Effect of Tryparsamide Therapy on Blood Wassermann Reaction

Type of Neurosyphilis	Number of Patients Reported On	Blood Wassermann Reaction				
		Negative	Negative Remained	Positive Remained	Re-versed	Re-duced or In-creased
General paralysis and taboparalysis	34	12	9	9	4	—
Asymptomatic general paralysis	17	7	2	4	1	3
Tabes dorsalis	23	18	1	1	1	2
Asymptomatic neurosyphilis Group 2	16	10	1	—	—	5
Meningovascular	37	18	13	—	3	3
Total	127	65	26	14	9	13
Per cent of total		51.1	20.4	11.0	7.0	10.2

nerve palsies, are improved or completely relieved. The four exceptions are two patients with advanced primary syphilitic optic atrophy as the only demonstrable lesion, and two patients who died, one from cardiovascular syphilis, and the other from military tuberculosis.

This evaluation of clinical results is not final. On the basis of our experience thus far, however, the results of tryparsamide therapy appear to be superior to other methods of treatment, in early general paralysis, in meningovascular neurosyphilis, and in the majority of cases of tabes. Advanced general paralysis seems to be influenced little, if at all.

3 Moore J E Studies in Asymptomatic Neurosyphilis II. The Classification, Treatment and Prognosis of Early Asymptomatic Neurosyphilis. Bull. Johns Hopkins Hosp. 32: 231 (July) 1922.

The effect of tryparsamide on the blood Wassermann reaction in neurosyphilis is as negligible as in tertiary syphilis. As indicated in Table 2, the Wassermann reaction was positive in forty-nine instances at the start of tryparsamide therapy. It was reversed to negative in only fourteen, or 28 per cent of these, and was reduced in titer in nine. Moreover, there were thirteen instances of a previously negative Wassermann reaction becoming positive during tryparsamide treatment.

TABLE 3—Effect of Tryparsamide Therapy on Cytobiology of Cerebrospinal Fluid

Type of Neurosyphilis	Number of Patients Reported On	Cerebrospinal Fluid						Worse
		Negative Remained Negative	Reduced to Complete Negative	Markedly Improved *	Moderately Improved †	Slightly Improved ‡	Unchanged	
General paralysis and taboparalysis	34	—	5	5	13	7	3	1
Asymptomatic general paralysis	14	—	2	4	5	2	1	—
Tabes dorsalis	20	2	8	4	5	1	—	—
Asymptomatic neurosyphilis Group 2	12	—	10	1	1	—	—	—
Meningovascular	28	1	13	7	4	1	—	—
Total	108	3	38	21	28	11	4	2
Per cent of total		2.7	35.1	19.4	25.9	10.1	3.7	2.7

* Wassermann reaction positive only with large amounts of fluid; other tests almost or completely negative.

† Wassermann reaction reduced; colloidal curves shortened or negative; cells and globulin reduced; Wassermann and colloidal curves unchanged.

Particular interest attaches to these thirteen patients. In all, there was improvement in the cerebrospinal fluid, the fluid becoming completely negative in five, simultaneously with the change of the blood Wassermann reaction in the reverse direction. Eight of the patients presenting this phenomenon had early syphilis, and were within the first two years of their infection. The latter fact, considered in connection with the failure of the drug to heal lesions or to destroy surface organisms in early syphilis, and in connection with the appearance, during treatment, of recurrent secondary lesions in two patients with early neurosyphilis, has an important bearing on the general use of tryparsamide. In spite of the favorable effect on spinal fluid changes, we feel that when syphilis is of less than two years' duration this drug should be used only in combination with an arsphenamin. In attempting to protect the nervous system, one must not forget that serious damage may occur elsewhere in the body, in the absence of adequate spirocheticidal therapy.

In a study of the effect of tryparsamide on the cerebrospinal fluid, the factor of previous treatment, instead of complicating the results, emphasizes their significance. Though eighty-four patients had received prior treatment, often with favorable clinical results, practically all phases of the spinal fluid cytobiology remained positive, in all except two instances. Tryparsamide treatment was undertaken in many of these patients as a forlorn hope. The results, summarized in Table 3, need little comment. Among sixty-eight patients with parenchymatous neurosyphilis, the spinal fluid became completely normal in 22 per cent, was moderately to markedly improved in 45 per cent, and was practically uninfluenced (except for a reduction in cells and globulin content) in 32 per cent. In the meningovascular group, 69 per cent of the fluids of forty-one patients became completely normal, improvement was noted in 34 per cent, and only 5 per cent were unimproved.

One must not become discouraged by the failure of a single course of tryparsamide to produce striking clinical or serologic change. Especially for parenchymatous neurosyphilis, it is shown in Table 4 that the more treatment is given, the greater is the response to be expected in the spinal fluid. As with other forms of antisyphilitic treatment, tryparsamide must often be continued for many months to produce appreciable serologic benefit.

The effect of tryparsamide on the spinal fluid changes in neurosyphilis has been in our hands superior in degree and in rapidity to that of any other form of antisyphilitic treatment. We have gained an impression, however, that, in parenchymatous neurosyphilis, serologic changes are more easily accomplished by tryparsamide if intensive arsphenamin therapy has been previously carried out, even though such prior treatment may have failed to influence the spinal fluid findings. As indicated in Table 5, considerable improvement occurred, following tryparsamide, in 84 per cent of a group of patients with general paralysis and tabes, who had already been intensively treated, but not serologically improved, by other means, while a similar degree of improvement occurred in only 60 per cent of those previously untreated. This suggests that the best method of use of tryparsamide may be in combination with an arsphenamin administered intravenously, with intraspinal therapy, or both. Further experience must determine this point.

Twenty of the 133 patients here reported on have fulfilled the requirements for probation of clinical arrest, with blood and spinal fluid serologically normal for one year. These include eight patients with parenchymatous neurosyphilis (four with tabes, two with general paralysis, and two with asymptomatic general paralysis), and twelve patients from the meningovascular group. In an additional eleven patients (two with asymptomatic general paralysis, two with tabes, and seven with meningovascular neurosyphilis), relief from symptoms, and serologic normality have been achieved, but treatment is still being continued. Many of the remaining

TABLE 4—Effect of Varying Amounts of Tryparsamide Therapy on Cytobiology of Cerebrospinal Fluid

Type of Neurosyphilis	Treatment	Number of Patients Receiving	Cerebrospinal Fluid					
			Rendered Negative		Moderately or Markedly Improved		Unimproved or Slightly Improved	
			No.	%	No.	%	No.	%
Parenchymatous	1 course	25	3	8	16	45.6	10	40
	2 courses	16	4	25	6	37.5	6	37.5
	3 or more courses	17	8	47	9	53	—	—
Meningovascular	1 course	25	1	4	8	32	2	8
	2 courses	14	8	57.1	6	42.8	—	—
	3 or more courses	2	2	100	—	—	—	—

cases have been observed for only a few months. The amount of tryparsamide treatment necessary to accomplish these favorable results has averaged from twenty to forty injections, extending over an average period of fifteen months.

VISUAL IMPAIRMENT

Almost the only untoward effect of tryparsamide is a tendency to produce disturbances of vision. These reactions, which have been made the subject of a separate report,⁴ may be divided into the classes of sub-

⁴ Woods, A. C. and Moore, J. E. Visual Disturbances Produced by Tryparsamide. J. A. M. A. 82: 2105 (June 28) 1924.

jective and objective The symptoms of dim, blurred or dazzling vision are common to each class In the subjective group, ophthalmologic examination gives negative results, and these patients may usually be given further tryparsamide without fear of permanent damage In the objective group, the striking change is constriction of visual fields for form, without scotomas, and with or without diminution in visual acuity If these changes are present, the drug must be permanently withheld

TABLE 5—Influence of Intensive Previous Treatment on the Cytobiology of the Cerebrospinal Fluid as Influenced by Tryparsamide

Parenchymatous Neurosyphilis	No of Cases	Cerebrospinal Fluid					
		Rendered Negative		Markedly or Moderately Improved		Unimproved or Slightly Improved	
		No	%	No	%	No	%
Previously treated	38	13	34.2	19	50.0	6	15.7
No treatment for at least 6 months	28	3	10.3	14	50.0	11	39.4

Among 241 patients who have received more than 3,000 injections of tryparsamide, 10.2 per cent have developed reactions of the subjective type, and 5.5 per cent, objective evidence of visual damage All the twenty-four patients with subjective reactions recovered, with normal vision Of thirteen patients with the objective type of injury, three have completely recovered, in three, there is slight, in five, moderate, and in two, severe permanent damage to the eyes One patient is blind The incidence of noteworthy permanent injury is 2.8 per cent

Ninety-four per cent of all reactions occurred early in the course of treatment, by the time of the tenth injection Within the limits of dosage employed, from 10 to 80 mg per kilogram of body weight, we have observed no direct relationship between dosage and visual impairment Disease of the nervous system, especially general paralytic and tabetic neurosyphilis, is to some extent a predisposing factor to ocular injury, though reactions have occurred in six patients with normal nervous systems Contrary to our early opinion,² pre-existing syphilitic disease of the optic nerve or retina is not necessarily a contraindication to the use of tryparsamide, but special precaution should be exercised in such patients

We believe it possible to prevent serious damage to the eyes from tryparsamide by means of careful ophthalmologic control Before treatment every patient should be examined by a competent ophthalmologist as to visual acuity, fundi, and especially visual fields Reexamination must be carried out at the first appearance of subjective visual disturbance, and visual acuity and fields compared with those noted before treatment At this point, objective injury, if present, is usually so slight as to leave useful vision if the drug is permanently withdrawn The treatment of patients whose mental condition is too dilapidated for cooperation, or the continuation of therapy after changes in visual acuity or fields have occurred, is dangerous

The danger of visual impairment, however slight, combined with the comparatively poor results of tryparsamide therapy in types of syphilis other than neurosyphilis, leads us to feel that the general use of the drug ought strictly to be limited to neurosyphilis and trypanosomiasis

SUMMARY

1 In primary and secondary syphilis, or in tertiary syphilis without nervous system involvement, the therapeutic effect of tryparsamide is so slight as to preclude its further general use in these types of infection

2 In neurosyphilis, on the contrary, tryparsamide therapy produces favorable clinical and serologic results, which we believe cannot be equaled by other forms of treatment

3 Tryparsamide is of particular value in early general paralysis, in meningovascular neurosyphilis, and in the majority of cases of tabes Advanced general paralysis is benefited little, if at all

4 In early neurosyphilis, the comparatively feeble spirocheticidal value of tryparsamide precludes its use unless in combination with an arsphenamin

5 The best method of use of tryparsamide has not yet been developed

6 Visual disturbances following tryparsamide have occurred in 17.8 per cent of a series of 241 cases, but in only 2.8 per cent has noteworthy permanent visual injury resulted

7 This untoward effect may be largely obviated by appropriate ophthalmologic control of treatment

A COMPARISON OF TRYPARSAMIDE AND OTHER DRUGS IN TREATMENT OF NEUROSYPHILIS*

HARRY C SOLOMON, MD

AND

HENRY R VIETS, MD

BOSTON

The literature on the use of tryparsamide is exceedingly limited, and consists of the work of Brown and Pearce¹ on the experimental side, the work of Pearce,² Chesterman,³ Van den Branden and Van Hoof⁴ and Smillie,⁵ in the treatment of trypanosomiasis, the work of Lorenz, Loevenhart, Bleckwenn and Hodges⁶ in the treatment of neurosyphilis, and the work of Moore, Robinson and Keidel⁷ in the treatment of various stages of syphilis, including neurosyphilis This is a limited background, but, because of the important results reported, their publications are of unusual significance

* From the Boston Psychopathic Hospital and the Massachusetts General Hospital Boston Mass

* Read before the Section on Nervous and Mental Diseases at the Seventy-Fifth Annual Session of the American Medical Association Chicago June 1924

* This study was aided by a grant of funds from the Division of Mental Hygiene Massachusetts Department of Mental Diseases and under a Dalton Scholarship Massachusetts General Hospital The tryparsamide was made available through the courtesy of the Rockefeller Institute

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7 Moore J E Robinson H M and Keidel Albert Tryparsamide in the Treatment of Syphilis J A M A 82 528 (Feb) 1924

Our present interest is in a discussion of the effects of tryparsamide in the treatment of various types of neurosyphilis. Therefore, in the consideration of the published reports, those of Lorenz and his co-workers and Moore and his co-workers are the ones to be considered. Lorenz and his co-workers reported exceedingly good results in the treatment of general paralysis and tabes dorsalis, as well as meningovascular types of neurosyphilis, the results obtained never having been equaled by the use of any other drug. Moore and his co-workers have, according to their publication, obtained results that are almost identical.

For practical purposes, the most important consideration always is the clinical condition of the patient. Unfortunately, however, the interpretation of the clinical state is a matter that brings in the personal equation. Especially is this true in syphilis of the nervous system, in which the condition is chronic, the progress is often extremely slow, there are spontaneous improvements, and the symptomatology is such that one is easily led astray. A period of years is necessary before one can be relatively or absolutely sure that he is not misinterpreting slight remissions as arrest. This warning in regard to the interpretation of results applies to the present authors as well as to previous writers on this subject. The two reports mentioned are by men whose clinical judgment, based on much experience, can be trusted thoroughly. Nevertheless, we do feel that arrest and improvement are terms that are not easy to define nor their interpretation easy to check up.

Lorenz and his co-workers reported seventy-eight cases of parenchymatous neurosyphilis treated with tryparsamide, showing arrest in nearly 63 per cent and improvement in another 15 per cent, figures that may be considered as showing a far better result than anything that has been given in the past. Moore and his co-workers, with twenty-seven cases, have given us almost similar results, namely, 66 per cent arrested and 15 per cent improved. Each group of investigators reported ten treated cases of meningovascular syphilis with arrest, in each series, of nine cases and improvement, in each instance, of the remaining one. Because of the possibility of misinterpretation of clinical findings, the serologic results are of particular value. Here, again, the results reported are better than had even been obtained previously, and, with the exception of the findings in the blood Wassermann test, the two groups of investigators are in very close accord.

The reduction of cell count in the spinal fluid is particularly striking, each investigator reporting from 85 to 99 per cent improvement in their series and moreover, 65 per cent of the cases, after treatment, showing entirely negative cell counts. Globulin also is reported greatly reduced in 92 per cent of the parenchymatous cases by Lorenz and in 66 per cent of the cases by Moore. The Wassermann reaction in the spinal fluid was reported as reduced in 87 per cent by Lorenz, and in 82 per cent by Moore. Of more significance is the fact that Lorenz obtained negative spinal fluid Wassermann reactions in practically 35 per cent of the cases and Moore in 30 per cent. This finding is of extreme importance in representing a very definite, incontestable result. The colloidal gold test was also reported as showing most satisfactory improvement. Unquestionably, a serologic improvement is a very good index that something of satisfactory nature has been accomplished. While some cases in which the serology is improved do not make particularly good clinical progress, nevertheless, in the large,

clinical progress is more satisfactory in cases which show serologic improvement.

RESULTS OF INVESTIGATION

With this brief review as a background, we present the results obtained by us in the treatment of more than 100 cases of neurosyphilis with tryparsamide, comparing our clinical results with those previously reported. An exact tabular or statistical comparison cannot be made because of the short time in which patients have been treated and because of the difficulty, mentioned above, in estimating clinical improvement on a percentage basis. The results indicated are impressions based on careful investigation and collation of evidence, but they do not lend themselves to mathematical formulation. A comparison of serologic findings will also be made. Further, we report a few cases treated by other methods as a means of comparison with those cases treated by tryparsamide.

We have treated cases of neurosyphilis with tryparsamide for about eleven months. This period is, we feel, too short to enable us to make a very specific analysis. However, it is sufficient to give us some index of the results obtained. The conclusions are largely personal and, of course, stand for modification in the future. It may be said at the outset that our experience has not proved as satisfactory, from the clinical standpoint, as that reported by our predecessors, nor have the serologic findings been quite as gratifying. We have had no single case of parenchymatous neurosyphilis which has given an entirely negative spinal fluid finding as the result of treatment with tryparsamide, although two cases of tabes dorsalis approximate a perfect serologic result, one of which is as follows:

CASE 1—C S, a man with tabes of several years' standing, was given nine weekly intravenous injections of 3 gm. of tryparsamide at the Massachusetts General Hospital. A strongly positive spinal fluid Wassermann reaction was changed to negative; the cells were reduced from 84 to 8, and the colloidal gold curve, negative at the beginning, remained unchanged. The protein, originally slightly increased, was not affected.

SEROLOGIC FINDINGS

We have succeeded in obtaining some serologic improvement in almost all our cases. Certainly we confirm the statements made by our predecessors in regard to the reduction of the cell count in the spinal fluid. Almost invariably in all forms of neurosyphilis, after from six to eight injections, the cells become less than 10 per cubic millimeter. In a group of eleven cases of tabes dorsalis with cell counts varying between 17 and 108, all were reduced below 10 in a few weeks. This reduction in the cell count in the spinal fluid was particularly striking in some of our cases which had received long periods, often several years, of treatment by other methods, without having obtained a negative cell count.

CASE 2—K B, a man, with typical general paralysis, was committed to a state hospital where he received seventeen injections of arsphenamin. There was a very satisfactory clinical remission. He then, as an outpatient, received forty-one injections of arsphenamin in the succeeding eleven months. Despite the clinical improvement, the patient's serologic condition remained unchanged. Three spinal fluid examinations showed cell counts of 28, 35 and 22, respectively.

After ten injections of tryparsamide, the cell count was 6. A subsequent count was 3, and a final count, in January, 1924, showed no cells in the specimen examined. It may be worth while noting that the other spinal fluid tests, including the Wassermann reaction, globulin, and colloidal gold reaction,

showed absolutely no change after twenty injections of tryparsamide.

CASE 3—C H C, a man, aged 40, affected with tabes, admitted to the Massachusetts General Hospital, although infected in 1900 began to show symptoms in 1919. Forty six intravenous treatments with arsphenamin over a period of five years had only once lowered the cell count in the spinal fluid below 30. Six intravenous treatments of tryparsamide, 3 gm each, changed the cell count from 36 to 5, and the spinal fluid Wassermann reaction from strongly positive to negative.

Globulin has been reduced in amount in a large number of cases, but the test has very rarely become negative. In one case of tabes, the protein dropped from 138 to 32 mg per hundred cubic centimeters after eight intravenous treatments of 3 gm each. In many cases, the reduction was about one third, rarely was there any increase in protein.

The same, moreover, is true of the Wassermann reaction in the spinal fluid. We have been able to obtain a diminution in the strength of the reaction but only in a relatively few striking cases have we been able to obtain negative reactions. The spinal fluid Wassermann results have been more encouraging in tabes dorsalis than in other forms of neurosyphilis. In the Massachusetts General Hospital series of fourteen cases, the spinal fluid Wassermann reaction was made negative in more than 50 per cent after one intravenous course of from six to nine treatments. All but two of these cases showing a change to a negative Wassermann reaction had previously shown a strongly positive reaction. Of seventy-one cases of various types treated with tryparsamide, the spinal fluid Wassermann reaction was changed from positive to negative in twelve, was reduced in strength in six, and was unchanged in fifty-three. Practically all the changes from positive to negative were in patients with tabes dorsalis.

CASE 4—H B, a man was seen at the Psychopathic Hospital where a questionable diagnosis of general paralysis was made, questionable because, although the serologic tests were typical, the patient did not show a psychosis or typical speech defect.

In February, 1921, the patient had a convulsive seizure. In March, 1921, a second seizure occurred. Again, in August, 1922, he had several more seizures. The patient had unequal Argyll Robertson pupils, hyperactive knee-jerks, and possibly a slight, though not very definite, slurring in his speech. Mentally, he was conceivably euphoric but there was no definite evidence of a psychosis, nor was there any memory defect or difficulty with arithmetical tests.

From August, 1922, to June, 1923, the patient received fifty-four injections of arsphenamin, three intraspinal injections, and eighteen spinal drainages. At the end of this treatment, the spinal fluid findings were: Wassermann reaction, positive with 0.4 cc; globulin, 3+, albumin 3+, cells, 22 per cubic millimeter, colloidal gold curve, 5555330000. After thirty tryparsamide injections, his spinal fluid, in May, 1924, showed a negative Wassermann reaction with 1 cc; globulin, 2+, albumin, 2+, cells, 0, colloidal gold curve, 5543310000.

CASE 5—P M, a man, came under treatment at the Psychopathic Hospital in January, 1919, with the signs and symptoms of a slowly progressive tabes, characterized by typical reflex changes, pain, girdle sensation, and ataxia. During the treatment this patient presented a situation that teaches a very important lesson in dealing with spinal fluid reactions. At the time of admission, the cerebrospinal fluid was strongly positive. The cell count was 134. The Wassermann test was positive in 0.05 cc. There was a moderately positive colloidal gold test. From January, 1919, to June, 1923, the patient received a considerable amount of treatment, consisting of 106 injections of arsphenamin, twelve intraspinal injections, four intracisternal injections, twenty-three spinal drainages asso-

ciated with the arsphenamin injections and twelve spinal drainages associated with mercury injections.

During this period of treatment the spinal fluid findings varied greatly. At times there was no globulin, albumin and the cell count were normal and the colloidal gold test was negative. This would be succeeded by more strongly positive reactions. At times the Wassermann test became negative in 0.4 cc and then later would be positive again with 0.1 cc. Thus, in the examination of May 1923, cells, globulin, albumin, and the colloidal gold test were all found to be negative, while the Wassermann test was positive with 0.3 cc. In June, just prior to the beginning of tryparsamide treatment, the Wassermann reaction was positive with 0.1 cc. There were 30 cells per cubic millimeter, globulin was 1+, albumin was 1+, and colloidal gold test negative. After four tryparsamide injections, the fluid showed a negative Wassermann reaction in 0.4 cc, 27 cells per cubic millimeter, globulin, 1+, albumin, 1+, and colloidal gold test negative. After ten injections of tryparsamide, we were delighted to find the fluid giving a negative Wassermann reaction with 1 cc; globulin, 1+, albumin 2+, 1 cell per cubic millimeter, and a negative gold test. However, subsequently, after twenty-six tryparsamide injections the Wassermann reaction was positive in 0.4 cc and after thirty-five injections it was positive in 0.6 cc. In other words although we succeeded in producing a negative Wassermann reaction with tryparsamide, it did not remain negative during the continuation of this treatment, and, on several occasions during this treatment, the cell count rose, on one occasion to 112 cells per cubic millimeter. We have had similar experiences with variation in the spinal fluid findings in cases treated by other methods. It demonstrates the need of considerable caution in interpretation of improvement shown on one or two examinations of the spinal fluid.

The colloidal gold curve has been slightly reduced in a number of cases, and, in a few, made negative. On the whole, however, it has not responded very markedly to treatment with tryparsamide.

To sum up the serologic findings as obtained by us, we conclude that there is a prompt, definite and striking effect on the cell count, that the effect on the globulin is rather satisfactory, but not particularly so, that the effect on the spinal fluid Wassermann reaction, with the exception of a few cases, is not remarkable, and that the effect on the colloidal gold curve has been on the whole, of little consequence, although a few striking results have been observed.

COMPARISON OF TREATMENTS

In order to have a basis of comparison with other forms of treatment, we have two controls. (1) We have treated with tryparsamide a group of cases which have had other types of treatment previously, (2) we have treated a group of cases by a variety of methods, including intravenous arsphenamin, serum injections into the lumbar and cisternal subarachnoid spaces, and serum injections into the cerebral ventricles.

Considering the first group of cases, which have had a long period of treatment by other methods and have then been put on tryparsamide, we obtain some interesting findings. First, there are a few cases in which serologic improvement was more satisfactory after tryparsamide was used. These cases represent a brilliant result for tryparsamide, showing that we are able, in these cases at least, to accomplish what other methods had not accomplished. However, this group of cases is exceedingly small, comprising not more than 5 per cent of the total number.

CASE 6—J T, a man aged 38 affected with tabes, seen at the Massachusetts General Hospital had had a primary infection seven years before. The chief symptoms were lancinating pains, ataxia of the legs and paresthesia of the feet. The pupils did not react to light, deep reflexes were absent, and the Romberg sign was positive. Intravenous treatment for

two years failed to improve the situation either clinically or serologically. Intravenous treatment plus spinal fluid drainage, followed by two years more of intensive intravenous treatment, left the patient with a strongly positive spinal fluid Wassermann reaction and 75 cells per cubic millimeter. Clinically, he had had pain after each treatment with arsphenamin, and now showed increasing sphincter difficulty and ataxia. After eight intravenous treatments with tryparsamide, 3 gm, the spinal fluid Wassermann reaction became negative and the cells were reduced to 8. There was also some clinical improvement. In this case, serologic results analogous to the foregoing had never been obtained by intravenous arsphenamin. The spinal fluid Wassermann reaction had always been strongly positive. This patient, then, from a serologic as well as a clinical standpoint, was distinctly improved.

CASE 7—C M, a man, when seen at the Psychopathic Hospital, had a complete optic atrophy in one eye, the vision in the other eye being entirely normal. When he came under treatment in 1921, he showed a Wassermann reaction positive in 0.3 cc, globulin, 1+, albumin, 1+, 7 cells per cubic millimeter, and a colloidal gold curve typical of general paralysis. From April, 1921, to March, 1923, he received thirty-five intravenous injections of arsphenamin, with eleven spinal drainages. This treatment produced no change in the serologic condition. The patient was then given eleven more arsphenamin injections, six intraspinal injections, and five spinal drainages. Under this treatment, the spinal fluid showed considerable improvement, reading as follows: Wassermann reaction, negative in 0.4 cc, globulin, none, albumin, 1+, 6 cells, and a negative colloidal gold curve.

The patient discontinued treatment until September, when he was put on tryparsamide. The first spinal fluid examination after his rest, which was made after one tryparsamide injection, showed that the reactions had become strongly positive, with the Wassermann test positive in 0.1 cc, globulin 2+, albumin, 2+, 39 cells, and colloidal gold curve, 4411000000.

After twelve tryparsamide injections, the spinal fluid was positive in 0.6 cc and all other tests were negative. After eight more tryparsamide injections the Wassermann test was positive in only 1 cc, all other spinal fluid tests being negative. In addition to exemplifying one of the very best results we have obtained serologically by the use of tryparsamide, this case is of interest in showing that tryparsamide may be used in certain cases of optic atrophy.

In contrast to this group of cases, we have several cases in which serologic improvement of a very satisfactory type was obtained by the use of other methods, and then the patient placed on tryparsamide without any further improvement.

CASE 8—J S, a man, when admitted to the Psychopathic Hospital in January, 1922, was an apparently markedly demented general paralytic, having all the characteristics of general paralysis, mental physical and serologic. The Wassermann reaction was positive in 0.05 cc in the spinal fluid, and the colloidal gold test gave complete precipitation in all ten tubes. Under very intensive treatment, consisting of intravenous arsphenamin, intraventricular, intracisternal and intraspinal injections and spinal drainage the patient made an excellent clinical recovery. The spinal fluid was almost negative showing a negative Wassermann reaction in 0.6 cc, no globulin, normal albumin, 1 cell per cubic millimeter, and a negative colloidal gold curve.

In June, 1923 the patient was given tryparsamide and mercury intramuscularly. From June, 1923 to April 1924 he received thirty-two injections of tryparsamide at which time the spinal fluid was positive with 0.4 cc, contained no globulin, had normal albumin, 5 cells, and a colloidal gold curve of 432000000. Three previous spinal fluid examinations made while the patient was receiving tryparsamide showed that the spinal fluid remained the same as in the other treatment. That is no further improvement took place and, as indicated, the spinal fluid examination after thirty-five injections of tryparsamide, showed stronger positive reactions than when we began the use of tryparsamide. In other words, whereas we were obtaining a definite and progressive serologic improvement prior to the use of tryparsamide, this improvement did

not continue when tryparsamide was given, apparently showing that tryparsamide was unable to accomplish as much as was accomplished by other methods.

CASE 9—O E, a man, aged 43, affected with tabes, seen in 1922, had a practically normal gait. The spinal fluid Wassermann test was strongly positive, the cells 57, and the total protein 74 mg per hundred cubic centimeters. Under four courses of arsphenamin in one and one-half years, the patient gained 20 pounds (9 kg), and the spinal fluid was improved as follows: Wassermann test, negative, cells, 40, total protein, 56 mg per hundred cubic centimeters. The patient was given eight intravenous weekly treatments of tryparsamide, 2 gm each. During this course of treatment, the patient broke down physically, with severe pains, micturition became more difficult, and he was unable to work for two weeks. The spinal fluid Wassermann reaction again became moderately positive, and the total protein increased to 93 mg per hundred cubic centimeters, although the cell count was reduced to 2. Two months later, the patient was again improving under arsphenamin.

From our own experience, and not considering that of the other workers, we draw the following conclusions in regard to the effect on serologic reactions of the use of tryparsamide as compared with other drugs. Tryparsamide is more effective in the reduction of the cell count than either arsphenamin or subarachnoid injections, although the same effect has been obtained by subarachnoid injections over, perhaps, a longer period of time. It has been our experience that tryparsamide is not more effective in general, in reducing spinal fluid findings other than cell count, than are those other methods of treatment, except in certain of our cases of tabes dorsalis. In most cases, the amount of protein has been somewhat reduced, the colloidal gold curve has rarely been changed, and the Wassermann reaction only occasionally either changed to negative or reduced in strength.

Concerning the clinical results, we have considerable hesitancy in expressing ourselves because of the difficulties already mentioned and, in addition, because we have obtained no astounding or brilliant effects. In other words, although we have had results that are clinically very satisfactory, they are not of such a striking nature that we can at once speak of the superiority of tryparsamide to other methods of treatment.

As regards the milder meningo-vascular type of syphilis, our general impression is that the patient does not respond clinically any more satisfactorily to tryparsamide than he does to subarachnoid and intravenous injections given in the conventional manner.

CASE 10—W M, a man, aged 41, was brought to the Psychopathic Hospital in May, 1919, because of inability to work and some slight mental peculiarities. Examination showed unequal Argyll Robertson pupils, exaggerated tendon jerks and a mental state best characterized as psychoneurotic with hypochondriacal ideas.

The spinal fluid showed a weakly positive Wassermann reaction 133 cells per cubic millimeter, slight globulin, increased albumin, and a weak syphilitic colloidal gold curve. Twenty-one injections of arsphenamin and one intraspinal injection were sufficient to produce an entirely negative serologic reaction and a complete clinical improvement, and to date there has been no return of symptoms or pathologic serologic reaction.

CASE 11—C T, aged 33 was seen in 1920, when the patient had facial pain but no signs of central nervous system syphilis, except serologically. The blood and spinal fluid Wassermann reactions were strongly positive, and 62 cells per cubic millimeter, with an increase of protein, were found in the fluid. Thirty-nine intravenous treatments with arsphenamin over a period of three years failed to change the tests in the spinal fluid. On eight examinations, the cells ranged from 11 to

136 per cubic millimeter, while the Wassermann reaction always remained strongly positive in both blood and spinal fluid. Four intracisternal treatments reduced both the Wassermann reactions to negative and the cells to 9 in the spinal fluid. Nine months after the last intracisternal treatment the blood and spinal fluid Wassermann reactions were still negative, and only 1 cell per cubic millimeter was found in the spinal fluid. From a clinical point of view, the patient did very well. The pain disappeared and there was a notable gain in weight and strength. No new signs or symptoms have developed in the last year.

In the cases of tabes we have, on the whole, had good results. Many patients did very well serologically, some improved clinically, and only one broke down under treatment. Our results with intraspinal forms of treatment, however, have almost uniformly been better, although the more elaborate technique and the time consumed do not favor this method as compared with the simple intravenous tryparsamide treatment. There is a possibility, nevertheless, that more prolonged treatment with tryparsamide will give equally good results, and, if such is the case, a very important drug has been added to our antisyphilitic remedies. We feel that, because of the ease with which tryparsamide can be given, we should be strongly prejudiced in its favor, provided equally good results could be obtained, as compared with our known results with the intraspinal methods. Our results in cases of tabes dorsalis, even after a few treatments over a short period of time, point in that direction.

In cases of general paralysis, we have had no striking or brilliant results. We have had several deaths of patients treated by this method, not as a result of tryparsamide, but indicating inability of the drug to arrest the process.

CASE 12.—H S a man was brought to the Psychopathic Hospital in May 1923 where a diagnosis of general paralysis was made on the basis that the patient had become progressively more forgetful for six months and, on admission to the hospital, was found to be stupid, showing a loss of memory, depression and characteristic speech defect. His neurologic examination, except for the speech defect, was quite negative. The spinal fluid was characteristic of general paralysis.

He received fourteen injections of tryparsamide with intramuscular injections of mercury. A total amblyopia resulted. He deteriorated rapidly, became feeble and bedridden, and died a typical general paralytic death.

We have had to discontinue the use of the drug in several other cases because the patient was going downhill so rapidly and the mental symptoms were increasing to such an extent that treatment could not be continued. In some other cases, after a preliminary and brilliant improvement, the patient has failed. In other cases, improvement has resulted.

CASE 13.—J P a man was admitted to the Psychopathic Hospital in May, 1923 with the signs of typical general paralysis. At times he was happy euphoric and excited, and at times he was quiet and depressed. The serologic reaction was typical of general paralysis. He received eight arsphenamin injections, two intraspinal, and three cisternal injections during May. In June tryparsamide treatment was begun. He received sixteen injections. At the beginning of the treatment he apparently showed some improvement, but this was very short-lived. He became more and more confused and began to deteriorate both mentally and physically. There was no change in the serologic reaction. He complained of severe headaches, dizziness, and dimness of vision. He lost greatly in weight and was becoming so weak and so obviously deteriorated that treatment had to be discontinued.

CASE 14.—Mrs J H, aged 35, rather suddenly in August, 1923, had an attack of dizziness, weakness irritability and an

atonic gait. She became unstable emotionally and silly. Her speech was slurring. The blood and spinal fluid Wassermann tests were strongly positive and the spinal fluid contained 58 cells, 174 mg of protein, and showed a colloidal gold curve of 555320000. After eight treatments with tryparsamide, the cells were reduced to 4 and the protein to 121 mg but the Wassermann and colloidal gold reactions were unchanged. Clinically, however, the improvement was marked. Dizziness, weakness and irritability disappeared, her speech improved as well as her emotional status. After a second course of intravenous tryparsamide, eight doses of 3 gm each the protein was reduced to 108 mg the other tests remaining unchanged. Eight more treatments, thirty-two in all, failed to change the serologic reactions, but, clinically, more improvement was noticed. Eight months of continuous treatment therefore resulted in a good clinical improvement. The only serologic change was in the cell count, which was reduced to normal, and the protein, reduced one-third. From the latter point of view, the prognosis must be considered poor, and it is certainly not as good as in some of our cases treated with intracisternal serum injections over a shorter period of time.

It is not in our power to say that the tryparsamide has given us either better or worse results than we obtained with other intensive methods of treatment. It is much like arsphenamin in the respect that a feeling of well-being is engendered, probably, however, to a greater extent. A voluntary nonsyphilitic who desired to see the result of the drug reported that it was better than any cocktail that he ever took, and that he felt "like a million dollars" for twenty-four hours after the injection.

Many of the patients begin to gain weight in a most striking fashion, some rapidly, after beginning a course of tryparsamide. However, nearly all these patients begin to lose weight after a number of weeks and come down to their former weight level. This change of weight was not nearly so striking in the tabetic cases. A few gained 5 pounds (2.3 kg), none more.

DISADVANTAGES OF TRYPARSAMIDE

The unpleasant results of the use of tryparsamide should be mentioned. The most important, as already reported by the other workers, is the production of an amblyopia. This is a matter of very serious consequence. We have had at least three patients in whom an apparently permanent impairment of vision has resulted. One of these patients was a man with arrested neurosyphilis with negative serologic reactions, who was given tryparsamide because of periodic depressions. After three injections of tryparsamide, he developed a very marked amblyopia, which slowly improved but left him with a visual defect. Another patient developed transient amblyopia after each treatment, each attack clearing up to normal.

Immediate reactions of a nitritoid type were rarely seen. We have had but one patient who, after tryparsamide treatments, developed an edema of his mucous membranes of a very high degree similar to that which made the discontinuance of arsphenamin imperative after two years of uneventful treatment. A number of patients, however, complain of headache, slight nausea, dizziness, and mental confusion for from twenty-four to forty-eight hours following treatment. These effects have been entirely temporary and without any serious result. We have never seen a vein thrombosed as a result of tryparsamide injections, nor has any difficulty arisen from leakage of a small amount of tryparsamide about the veins. We have had two very unpleasant gluteal abscesses as a result of intramuscular injections of the drug. One patient who had arsenical dermatitis following arsphenamin treatment took a course of tryparsamide without dermatologic effect.

SUMMARY AND CONCLUSION

During a period of eleven months, about 100 cases of neurosyphilis of various types have been treated with tryparsamide at the Boston Psychopathic Hospital and at the Massachusetts General Hospital. The usual technic was the intravenous injection of 3 gm of tryparsamide at weekly intervals. Mercury and arsphenamin were also occasionally given. Occasional rest periods were given. No immediate reactions of serious nature were encountered. Four patients, however, developed a considerable degree of amblyopia, in three of which a permanent defect remained. Mild and fleeting amblyopias were also encountered.

The effect on the pleocytosis in the spinal fluid was very striking. In nearly every case, the cell count was reduced to normal after six or eight injections. These results were obtained, moreover, in some cases in which previously much antisyphilitic treatment had been given without developing a normal cell count. Globulin and total protein have been reduced in many cases, but, as a rule, only to a relatively small extent and in but few cases have these tests become negative.

The Wassermann reaction in the spinal fluid has not been greatly affected in the majority of cases, including a number in which more than thirty tryparsamide injections were given. There were, however, a number of striking exceptions in which the Wassermann reaction was made negative, some of these being cases in which long periods of treatment with other methods had failed to accomplish this result. The Wassermann reaction was made negative in about one half of the cases of tabes dorsalis.

The colloidal gold curve was apparently less affected by tryparsamide than any of the other spinal fluid tests.

In contrast to the cases in which tryparsamide has apparently been more efficacious than arsphenamin and subarachnoid injections, there were cases in which the latter methods produced better serologic results than tryparsamide.

Clinical improvement has been noted in various types of cases of neurosyphilis treated with tryparsamide. The most pronounced improvement was obtained in the meningovascular cases, but it was no more satisfactory than we have been accustomed to obtain with other methods. The clinical improvement in cases of tabes dorsalis was not so marked as was the serologic improvement, and we believe that the clinical improvement in these cases was, on the whole, less satisfactory than we have been able to obtain by other methods. Some improvement occurred in the cases of general paralysis, but in only a relatively small number. It does not seem to us that improvement has been more satisfactory with tryparsamide than with the older methods of intensive therapy by intrathecal, lumbar, cisternal and ventricular injections.

From our experience we conclude that tryparsamide definitely affects cases of neurosyphilis, in some instances giving results better than can be obtained by our older methods alone, and in other cases not giving as good results. Its ease of administration without any discomfort to the patient is a point of superiority. Its tendency to produce toxic effects on the optic nerve necessitates great caution in its use. We believe that the best results may be obtained by its use in conjunction with other antisyphilitic methods.

Finally, we would emphasize our belief that tryparsamide is an important addition to our antineurosyphilitic drugs.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS EBAUGH AND DICKSON, THOMPSON, LILLIE, MOORE, ROBINSON AND LAYMAN, AND SOLOMON AND VIETS*

DR WALTER T SCHALLER, San Francisco. Dr Henry G. Mehrtens has been experimenting with this drug at Stanford, and I have studied his cases with him. This study was limited to cases of general paralysis and taboparalysis which had not done well under methods of treatment, including intraspinal therapy, which we advocate and practice. The clinical results in twenty-four cases, in which 225 treatments were given, are much improved, seventeen, some what improved, four, failures, three. All of these patients received mercury. Of the seventeen patients much improved, thirteen have gone back to work, nine of whom are back at their old positions with the same pay as before, while four are working with a defect. Of the patients that are much improved, fourteen have a normal cell count, while in the other three cases it is slightly above normal but not over 7 cells. The cell count in the four cases somewhat improved is above normal but not over 10 cells. The three failures also show some improvement in the cell count. Of the patients that are improved, two now have a negative Wassermann reaction in the cerebrospinal fluid. The three failures show no significant improvement in the spinal fluid Wassermann reaction. In no case has the cerebrospinal fluid become entirely negative throughout, and in no case has the colloidal gold test become entirely negative. As a whole, the patients have increased in weight and strength under the treatment with tryparsamide. It is interesting to note that the three cases reported as failures show loss of weight to emaciation. Two cases made a striking improvement. One of these showed no change in the serology except reduction of cell count. This patient received eighteen consecutive injections of tryparsamide, with one short intermission during which the drug was not obtainable. The other case was that of a lithographer who had a marked tremor and was let out of his position on account of defect in his manual work. After treatment he was not taken back in his old position, but secured a similar position elsewhere and he is now doing satisfactory work. The eye clinic examined all cases before treatment was commenced. One patient had a mild optic atrophy before treatment, which was not influenced by the drug. Two patients developed a mild neuroretinitis which cleared after the drug was discontinued.

DR JAMES B AYER, Boston. I was associated with Dr Viets who collaborated with Dr Solomon in the preparation of their paper. Two reasons may be given to explain why the Boston group is not too enthusiastic over its results with tryparsamide, first, we have in our series a number of cases refractory to other forms of treatment, in which tryparsamide has also failed, secondly, I feel that Dr Solomon has had such good results from other forms of treatment in certain cases of general paralysis that very much was to be expected from any new treatment to impress him favorably. In spite of our not too enthusiastic attitude, we have certainly seen results from tryparsamide which are encouraging, so that our attitude is not at all one of pessimism. While not exactly jealous of the syphilologist or internist or anybody else who wants to treat syphilis, I do believe that neurologists should treat neurosyphilis, simply because the treatment consists of something more than treating a plus or minus in the blood or fluid. For example, not infrequently I am asked to use antisyphilitic medication in the treatment of a Charcot joint. I have never seen beneficial effects on the condition of Charcot joint from antisyphilitic medication. There may be exceptions, but I have not seen them. There are also other types of syphilis which are not amenable to antisyphilitic treatment. Dr Solomon has raised the point as to intracisternal injections of serum. I have no statistical conclusions to offer on that subject, but I should like to say that that treatment in the hands of Dr Solomon and of Dr

*The papers of Drs J E Moore, H M Robinson and R S Lyman and of Drs H C Solomon and H R Viets together with the discussion conclude the symposium on the treatment of neurosyphilis. The papers by Drs F G Ebaugh and R W Dickson by Dr Loyd Thompson, and by Dr W I Lillie were published last week.

Viets and myself has proved a boon in a number of cases which have resisted everything else that we have done. An occasional optic atrophy that does not readily yield to other forms of treatment has yielded or at least has become stationary under that form of treatment. One meningosyphilitic patient who had reached the limit of prejudice and of nephritis from tryparsamin and mercury, and who was rapidly getting worse serologically and clinically, was treated in this way with prompt relief. General paralysis seems to be influenced at least by intracisternal serum injections. So, while we are pushing our investigations of tryparsamide we are also correlating these other methods of approach to the nervous system. While undoubtedly the subject is becoming more and more complex, surely we are getting somewhere. I feel hopeful that a rational treatment of general paralysis, which is the dreaded form of neurosyphilis and so far inadequately treated, is coming a little nearer to us, and that some modification or combination of what we have is likely to bear fruit in the future.

DR J. H. STOKES, Rochester, Minn. We have two groups of results. The first group comprises results secured by the standard methods of treatment of neurosyphilis, and the second group deals with tryparsamide. The first group summarizes both clinical and serologic improvement. It depends on the rehabilitation and reconstruction of the patient in every sense of the word. I should like to emphasize the point Dr Solomon brought out—that we are not by any means helpless without tryparsamide. Valuable as is this agent, the older methods of treatment certainly do produce results. Our series covers 405 cases observed over a period of from two to seven years. Not one of these patients has had less than two courses of treatment. All cases have been carefully and systematically checked from every standpoint. In meningial syphilis we obtained excellent and good results, both clinically and serologically, in 91 per cent of cases. In cerebrospinal syphilis we obtained 75 per cent excellent and good results. In tabetic patients we obtained 48 per cent excellent results, while 5 per cent obtained good symptomatic results. In 39 per cent of cases of vascular neurosyphilis we obtained what appeared to be excellent and good results. There is an element of unpredictable damage in these cases which reduces the ultimate result. In our group of resistant general paralytic patients we got no excellent or good results, and only a small proportion of fair results. We heartily agree with Dr Moore that if the patient can get through the first ten injections without eye complications he will not be likely to have trouble. In 5 per cent there were objective changes. Only one patient, if I remember rightly, sustained permanent damage and we had no case of total blindness. Three patients recovered completely so far as objective eye symptoms were concerned, and one patient who sustained temporary impairment ultimately had better vision after tryparsamide therapy than before. I would emphasize that an ophthalmologist must test the eyes. There should be perimeter tests of the fields, not merely rough tests. Certain social aspects should not be forgotten. The Herxheimer reaction may occur in patients with mild elation, grandiose ideas or mild depression. In tabes in general, tryparsamide has not been of much help to us. In gastric crises, however, we have had six patients who absolutely resisted everything we knew how to do, five of whom have been at least temporarily benefited by tryparsamide. Meningeal relapses take place under tryparsamide as under older forms of treatment. We cannot expect to be miracle workers. I think that time is a most important factor. As one compares the results of various observers, one feels that the longer the drug is used the better the results will be. The simplicity of the treatment is a godsend. In fact, it is the salvation of quite a few patients who have exhausted every resource in the effort to get well. Disappointment seemed inevitable at first, but at the end of eighteen months we find our results encouraging. I still regard the use of tryparsamide as a last resort. The older methods of treatment should be tried first. Because of possible eye symptoms, many patients say they would prefer death to the acceptance of even the small risk of blindness that is involved.

DR LEE D. CADY, St. Louis. Our experience at Barnes Hospital began about seven months ago under the direction

of Dr. Sidney I. Schwab. We began using mercury and tryparsamide and after a series of about fifty cases had been started we began using neoarsphenamin, mercury and tryparsamide concurrently. All of our twenty-eight patients with general paralysis and taboparalysis except one have improved serologically. That patient had what Dr. Stokes calls the Herxheimer reaction and in addition marked visual impairment. Many of these patients have so far improved that they have been able to leave the institutions to which they have been confined or to return to work. Twenty-eight and six tenths per cent of these patients with general paralysis and taboparalysis complain of visual disturbances. However, we have been able to find signs of eye involvement in only about 7 per cent. We have thirty tabetic patients, all of whom have had varying degrees of serologic improvement. All the cell counts have decreased. This also has occurred in all other cases. The globulin contents have usually been reduced. The colloidal gold curves varied many of them markedly. Twenty-three per cent of these tabetic patients had some eye symptoms, varying from dimness, blurring or scintillations to an actual impairment of visual acuity. We were unable to detect any objective findings in more than 10 per cent of these cases. In the cerebrospinal syphilis group are twenty-six cases, all except one having improved serologically. Twenty-six per cent of these patients had visual symptoms and 9 per cent had objective findings. Of four cases of optic atrophy or optic neuritis, two cases had been vigorously treated with arsphenamin and mercury up to the time of tryparsamide therapy, and escaped any impairment. In the two cases in which arsphenamin and mercury had not been given, the results with tryparsamide were not good. In one of these, a case of optic neuritis, the patient became absolutely blind after the second dose of tryparsamide and remained so for twelve days. Vision returned and the patient now has very good central vision, the visual fields are gradually enlarging, and he has been able to return to work with unimpaired efficiency. Encouraged by the lack of impairment in those cases that had been thus treated up to the time of tryparsamide therapy, we deliberately treated nine more cases in which there were optic nerve disturbances. Serologically and clinically, without considering the visual disturbances, all thirteen patients have improved. Only five of these cases have become worse. Treatment is stopped when the patient is made objectively worse. Four patients have had ear disturbances—either partial or total deafness. When treated vigorously, they had vestibular disturbance, which is almost as troublesome to them as blindness or amblyopia would be. Many of our male patients have mentioned a lessening of libido sexualis while under treatment. It is our opinion that tryparsamide, used as an adjuvant to other antisiphilic measures, offers the maximum degree of hope to the neurosyphilitic. Excluding eye complications, about 85 per cent of our patients have improved clinically, including increase in weight, and sense of well being.

DR A. L. SKOOG, Kansas City, Mo. I think we will agree that the percentages of results have improved in proportion to the length of treatment. In other words, a man who has had an experience of more than one year has had better results than the man with an experience covering a few months. Unfortunately, my experience is less than a year, and, in fact, only begun and I have but a limited number of cases from which to draw conclusions. However, I have been quite optimistic, in fact, my optimism might be rated just about with that of Dr. Moore. In the first place, in the treatment of neurosyphilis it must be remembered that a vast number of methods of treatment have been proposed during the last thirty years, and probably the greater number of these within the last ten years. Therefore it is not surprising that we are always looking for improvement, on account of some of the doubtful or poor results reported. As will be recalled, Dr. Lorenz considered that additional treatment should be used. In other words, in almost his entire group of cases he was using some form of mercury given at the same time that the tryparsamide was administered. I have started to use mercury in conjunction with and at the same time as the tryparsamide injections are given. Most of my treatments have been given lately. I

have some cases in which I have tried to give smaller doses twice a week. All observers who have had considerable experience have warned about the eye complications that might occur or should be looked for. I have had three cases with eye complications. All of my cases have been examined by an ophthalmologist. Two of these cases were very mild, and the symptoms, purely subjective, subsided in a week or two. One case was a little more severe and I stopped the treatment and sent the patient home for a period. This man purposely deceived us a little. It was a case of early general paralysis without any grandiose ideas, an excellent case in which to begin treatment, and the patient was extremely optimistic. He purposely deceived us and did not tell us about the subjective ocular symptoms or amblyopia until after he had had trouble for at least ten days. However, later reports showed that he was not getting any worse and he will probably recover completely. Regarding eye findings, we should remember that tryparsamide belongs to the same group of arsenical products as atoxyl, and considerable has been written on the danger of optic atrophy developing following the use of this drug, and it probably is on this account that treatment with it has been discontinued. However, I believe that tryparsamide is a less toxic product than atoxyl. I have not administered tryparsamide in the presence of optic changes. It is well known that optic atrophy and other optic nerve changes occur in several forms of late syphilis. For instance, it occurs quite frequently with tabes dorsalis, with or without treatments other than tryparsamide, it sometimes occurs in general paralysis, and sometimes as a primary optic atrophy.

DR CHARLES F. READ, Chicago. We have had about thirty-three patients under treatment with tryparsamide, and of these about twenty have received two or three courses of eight doses each. The cell and globulin content in these cases was reduced about the same by tryparsamide and sulpharsphenamin. The Nonne test also was affected about equally by the two treatments. Of the original group, twelve patients have just completed the third course, and of these four are in complete remission and seven in very fair condition. The latter are very interesting cases because we have had the patients tested by a psychologist and have found their mentality apparently good. Their fund of general information also is good, but they do not seem to have the 'pep,' the initiative, that they should have. We feel that they ought to go out and earn a fair living, but we cannot quite trust them. One of them has a well marked dementia praecox reaction though intellectually in good shape. Nine were dropped on account of suggestive fundus findings. In three cases these findings were very positive. One I hesitate to report because we were in error in giving the patient a treatment before he was examined by an ophthalmologist. After this one treatment it was noticed that he was blind, and the disk was found to be completely atrophied, an impossible condition, I believe, as the result of one treatment with tryparsamide. However I am glad to say that his vision has returned to a sufficient degree to enable him to get about. We have been disappointed to find that tryparsamide is not going to restore 50 per cent of our institutional patients with general paralysis, but, on the other hand, we have secured great improvement even to complete remission, in some of the more acutely disturbed patients. On the whole, our findings have closely paralleled those reported by Dr. Solomon and by Dr. Wile. We have procured physical health and a few remissions, and have prevented further deterioration in all but a few moribund patients. In no case have we secured a spinal fluid Wassermann reaction negative to 1 cc.

DR CLARENCE A. NEYMANN, Chicago. During the past year, Dr. Singleton and I have treated about thirty patients. Fifteen have not received sufficient treatment to allow us to draw any conclusions. Of the fifteen that have received at least twenty-four treatments each, eleven are clinically very much improved, four are either not improved or are worse. The most striking factor is that the serologic findings in these cases are quite different from those of a group treated by Dr. Brush and myself by means of the Swift-Ellis and allied methods. We have not obtained a negative serologic result in any of the eleven improved cases. Some show

reductions in cell count, some changes in the colloidal gold curve, and sometimes the Wassermann reaction has been reduced to negative or to a doubtful negative. But in not a single one of these cases has the spinal fluid become absolutely negative. On the other hand, of the cases treated with intraspinal therapy, some 50 per cent became negative after about a year of intensive treatment. However, the general clinical results of the tryparsamide group seem to be a little more encouraging than the results of the Baltimore group. Of the twenty-five cases treated in Johns Hopkins Hospital with intraspinal and intravenous injections, six showed a very striking clinical improvement, and of the fifteen cases treated here, eleven showed an analogous improvement. I believe that the type of case we have been treating is quite different from the type that has been treated by Dr. Read and Dr. Solomon. Our patients are all veterans of the war—young, and in the early stages of general paralysis. The few cases in the later stages, with definite outspoken symptoms, have not shown very much improvement, in fact, we feel that here our efforts were very much in vain. I agree with Dr. Moore that the blood Wassermann reaction usually remains unchanged after treatment with tryparsamide. In one case, a previously negative blood Wassermann became positive during treatment. The patients who showed the greatest improvement were those that had been treated with other arsenicals previous to being treated with tryparsamide. We have observed definite retinal changes in three cases. All of these were of the tropharytic type. Perhaps the natural progress of the disease might account for these findings.

DR JULIUS GRINKER, Chicago. First of all, I should explain why Chicago is not represented in this symposium, with the exception of the small amount of material studied only during the last few months. This is the reason. The "Wisconsin" group, having had a practical monopoly of tryparsamide in the West, have seen fit to ally themselves with an unethical institution in Chicago which has prevented us from using this drug in an experimental way. That explains the paucity of reports from the great medical institutions of Chicago. What little I have seen of tryparsamide effects has not impressed me favorably. Through the courtesy of Dr. Read, I was shown some of his cases, and my limited observation has taught me that there is too much visual disturbance from tryparsamide, and that I should not venture to use the drug on private patients. I understand that tryparsamide will be released soon, and I am sorry the experimental work could not be carried on for a longer period, because of the cases of optic atrophy that are bound to occur. Since I have nothing of my own to offer on the use of tryparsamide, I wish to state that, after listening to everything that has been said on this subject, I am still a firm believer in the Swift-Ellis treatment. I have used it for several years and have had favorable results. I shall not run after a new drug when I have at my disposal a method which, to say the least, does not produce optic atrophy. I believe that most of those who have used the Swift-Ellis treatment have had very satisfactory results with it. We have improved patients who do efficient work, the majority of these are in better condition than the patients whose cases are set forth in the most optimistic reports on tryparsamide as presented by the most optimistic reporters. The Swift-Ellis method is still the best remedy at our disposal in the treatment of parenchymatous neurosyphilis. Those of us who have not used it were not afraid of it because it did not bring results, but because of the work involved in employing it. The method, however, may be so simplified that five minutes' instruction will suffice to learn its use with ease.

DR FRANKLIN G. EBAUGH, Philadelphia. I really have nothing to add except to answer the question concerning the release of this drug. It may be wise, if such action is warranted by numerous expressions such as we have had concerning this treatment during the past year. I have received ten or fifteen requests for tryparsamide. In answer to all these requests I have asked that the applicants communicate with the Rockefeller Foundation. On studying these requests and making an analysis of the types of syphilis the physicians making them wished to treat, it was rather inter-

esting to note that the majority of them concerned a secondary syphilis or an early tertiary condition, and in a few cases an outside man had contemplated the use of tryparsamide in ordinary syphilis. Of course, the drug would do a great deal of harm in a case of early syphilis. Its use should be absolutely confined to cases of neurosyphilis.

DR. WALTER I. LILLIE, Rochester, Minn. I have been unable to find in the literature any report of a true toxic effect on the visual mechanism produced by any of the arsenical compounds. We all know that the drugs that have a direct toxic effect on the visual mechanism produce a retrobulbar neuritis, manifested by a rapid loss of the central vision due to a definite central scotoma. The simple optic atrophy that may develop does not appear early, but may come later. The ocular changes found during treatment with tryparsamide have been rather constant. All cases reported by the different authors show a reduction of the visual acuity with a peripheral shrinking of the visual fields. A central scotoma has never been reported. This type of a change without a central scotoma is not the usual picture of a toxic drug effect on the visual mechanism. Just what effect tryparsamide has I do not know, but all the changes in the vision and perimetric fields reported to be due to tryparsamide have been found frequently in untreated neurosyphilis. Perhaps tryparsamide activates a latent syphilitic process already involving the visual mechanism. We do know, as shown by Dr. Moore, that all the 'untoward effects' develop early in the course of the treatment. In his cases, 10 per cent had subjective symptoms, while only 5 per cent had objective findings. In my cases 8 per cent had subjective symptoms, while only 4 per cent had objective findings. With arsphenamin treatment, 5 per cent of my cases had objective findings, but none had subjective complaints. Therefore, I would place the greater part of the blame on the infection and not on the treatment.

DR. JOSEPH EARLE MOORE, Baltimore. The material presented by Dr. Solomon and by a number of the discussers points clearly to the fact that tryparsamide seems to do more for those patients in whom it is used in combination with other forms of treatment. In our presentation of material from Baltimore, we have laid some stress on this point, but not as much as I think might be. I am sure that the best way to use tryparsamide has not yet been developed, that there are some cases that cannot be benefited by tryparsamide or any other form of treatment. In others, tryparsamide will accomplish more than other methods of treatment and in still others the reverse will be true. I disagree with Dr. Lillie on the question of central scotoma as an evidence of toxic damage from tryparsamide. There is no doubt in the minds of most observers that atoxyl produces blindness, and the percentage of patients who become blind from this cause is extremely high. No one has reported a central scotoma in patients who develop optic atrophy from the use of atoxyl. I think there can be no doubt that the ocular complications which have been observed in many of the series reported are due to tryparsamide and not to the disease. It is quite true that patients with preexisting ocular damage may in some instances grow worse as a result of tryparsamide more rapidly than if left alone, but this situation also prevails with respect to arsphenamin. In regard to releasing tryparsamide, I think the situation is extremely difficult to decide. From the standpoint of syphilis, leaving out the question of trypanosomiasis, I should be opposed to releasing the drug at the present time. I think we have not as yet had enough experience either with the best method of using the drug or with the best method of preventing serious damage to the eye from its use. Therefore, it would seem to me to be unwise to put it on the market for general use in syphilis. I agree that once it is put out, it will be tried in every form of syphilitic infection despite repeated warnings. At the same time, it is only fair to the Rockefeller Institute to say that the trypanosomiasis situation is such a complicated matter that the balance is a very difficult one to determine.

DR. HARRY C. SOLOMON, Boston. We psychiatrists are a funny group. Dr. Read, who, like myself, is a psychiatrist, is apparently much more skeptical about the results obtained

from the use of tryparsamide in general paralysis than are some of the men who deal more extensively with extra-institutional types of neurosyphilis. Explain this as you will. I am not ready to admit or to believe that one can say that a seemingly early case is to be more satisfactorily handled by drug treatment than is one that seems of much longer duration. Anybody who has followed general paralysis for any period of time I think will agree that the patients who come to a hospital with very recent symptoms and apparently in the best of physical condition are not infrequently very much more rapid in their demise than are those in whom the disease is of much longer duration but progresses more slowly. In our experience patients who were apparently demented have reacted at times very well to treatment and have made very good remissions, whereas cases that we believed to be very early general paralysis have shown no improvement at all. Further, if one tries to relate the histopathology with the clinical symptoms, one is struck at once with the fact that there is no correlation, apparently demented patients may have very few histologic changes in the brain, and some patients that seem to be very little deteriorated have markedly atrophic brains. So I do not believe that the entire explanation of the difference in results reported is that one group of investigators has dealt with early cases and another group with late cases. Let us remember that it is often possible to rehabilitate patients with general paralysis for a number of months. There are many in state hospitals who could be back at work, but they are general paralytics, and a frequent attitude of the staff is that they cannot get better. They therefore remain in the hospital until they justify this opinion by their ultimate decline. A no more definite improvement in a treated case may be viewed as a striking therapeutic success, and the patient reinstated in the community. Tryparsamide despite all that has been said about its inefficiency is of value. It has a place in the treatment of syphilitic diseases of the nervous system, it is an addition to the Swift-Ellis method and other treatments, which were tremendous advances over what we had before. It takes its place with arsphenamin and subarachnoid therapy, and is an important addition. Some patients are going to be harmed by tryparsamide, as others have been harmed by arsphenamin. Practitioners who are going to use it injudiciously will use it injudiciously despite anything that is said or written, whether it is withheld for a year or put on the market now. By putting this drug into the hands of people who do not know how to use it, we are going to learn more about how it should be used than in any other way. Having used it now for eleven months and heard the reports of others, it seems certain that we shall get at the most, 1 per cent of amblyopia of marked degree, and many of the patients who will develop amblyopia are patients who untreated, would have but a brief life, institutionalized and incapacitated.

Congenital Enlargement of the Colon—At a recent meeting of the Medical Society of the Hospitals of Paris, Drs. Berge, Chevrier, and Lefevre demonstrated post mortem a case of congenital enlargement of the colon in a boy of 15. The patient had suffered from constipation since birth, and had often felt no call to stool for periods of a week or even a month at a time. He was operated on for an attack of intestinal obstruction, and died a few days later. At the necropsy it was found that not only the abdomen but the thorax also was completely filled by two loops of the colon, one of which was distended to an enormous extent. At first sight it seemed as though the thoraco-abdominal cavity from clavicles to pubis, contained nothing but these two enormous loops of colon but closer examination revealed a narrow space about 2 inches in depth, in the upper part of the thorax, into which the heart, the lungs and the liver were compressed. The spleen alone retained approximately its normal position. The loop of distended colon measured 50 cm in length, 27 cm in breadth, and 54 cm in circumference. The retained fecal matter weighed almost 14 kg, and the loop contained much gas. "This weight and these dimensions" says a French correspondent, "justify the publication of this case and diagram"—*Lancet* 2 230 (Aug. 2) 1924.

THE ENDOMETRIUM OF THE MENSTRUATING UTERUS*

EMIL NOVAK, M.D.
AND
RICHARD W. TE LINDE, M.D.
BALTIMORE

The investigations of Hirschmann and Adler,¹ which have been confirmed in all essential respects by subsequent workers, have established quite definitely the histologic changes occurring in the endometrium at various phases of the menstrual cycle. There is little or no difference of opinion at the present day concerning the histologic characteristics of the postmenstrual, the interval, and the premenstrual stages. With reference to the menstrual phase, *i. e.*, the phase of actual menstrual bleeding, opinion is not nearly so unanimous. Knowing the picture just before the onset of the period as well as that found just after its close, one might logically assume that the chief feature of the menstrual phase is a transition from the premenstrual high point of development to the low point so characteristic of the postmenstrual phase. Since both the premenstrual and the postmenstrual stages are characterized by an intact endometrial surface, one might further suppose that the transition from one to the other is accomplished by a simple involution or shrinkage, without actual loss of tissue. It is with this question of whether or not an important part of the endometrium is lost at menstruation that this paper is chiefly concerned, although we have also included in the study a consideration of other interesting features of the menstrual process, such as the circulatory changes, the changes in the glands and stroma, the infiltrative processes, and the method of regeneration of the endometrium after the flow.

When one considers its importance, one is struck with the rather remarkable paucity of trustworthy investigations of this subject. This is probably to be explained by the fact that surgeons have commonly felt a hesitancy about operating during the menstrual period. Even now, it is safe to say that practically all surgeons avoid the menstrual periods in selecting the time of operation for their patients. And yet, so far as we know, there is no evidence to indicate that abdominal operations during the menstrual period are attended with greater risk than those performed at any other time. This fact is impressed on every surgeon in the case of imperative operations performed on menstruating women. In spite of this, it is probably true that the traditional aversion of both surgeon and patient to operations during menstruation will continue to influence the time selected for elective operations. Certainly, no one can object to this attitude on the basis of the patient's welfare, the prime consideration in all surgery. In all large clinics, however, it frequently happens that patients begin to menstruate just before or just after admission, and we see no reason, in such cases, why operative procedures should be delayed, perhaps for a good many days.

The aversion to operating on the menstruating patient is probably a survival of the belief that the menstrual period is a process by which the woman's system rids itself periodically of impurities of one form or another. Our modern conception of the menstrual phenomenon is altogether different. The premenstrual hypertrophic changes in the endometrium unquestionably represent a preparation for a possible impregnated ovum. If fertilization of the ovum occurs, these changes pass on by easy stages into those of the early decidua. If fertilization does not occur, the ovum dies, and the preparation in the endometrium goes for naught. It breaks down, with the occurrence of hemorrhage, and it is this catabolic process which constitutes menstruation. There is much truth, therefore, in the dictum that "women menstruate because they do not conceive." The fact that certain secretions of the menstruating woman exert an injurious effect on the growth of flowers and plants, as Schuck² and others have apparently shown recently, is not in any way incompatible with this view.

MATERIAL

The present study is based chiefly on a series of twelve recent cases in which the uterus was removed at some time during menstruation. The indication for hysterectomy in all these cases was either pelvic inflammatory disease or myoma. Most frequently, the two lesions were combined. In all the cases of the series, the menstrual rhythm was perfectly normal, and the menstrual dates were carefully checked. In many of these cases the exact hour of menstrual onset was determinable objectively, as the flow made its appearance after the patient's admission to the hospital.

Four women were operated on the first day of the period, *i. e.*, within twenty-four hours of its onset. Five operations were done on the second day, two on the third, and one on the fourth. In addition to these, three uteri were removed immediately before the onset of the period, in these cases, menstruation was due at the time, but external bleeding had not yet been observed. A considerable number of uteri have been studied from patients operated on very soon after the close of the period, while a background for the study has been furnished by many hundreds of sections from uteri removed at all intermediate stages between menstrual periods.

In all our cases, great care was taken to avoid injuring the endometrium during the operation. Traction sutures of catgut were usually employed in preference to vulsella or elevating forceps. Immediately after removal, the uterus was opened and placed in Zenker's fluid, so that in practically all our cases the fixation was begun within two or three minutes after the removal of the uterus. These precautions, we feel, give our material an unimpeachability not possessed by that forming the basis of many previous studies.

CHANGES IN THE ENDOMETRIUM

The Nonmenstruating Endometrium—On most points, there is now little difference of opinion as to the changes occurring in the endometrium at various phases of the menstrual cycle. For example, the characteristics of the postmenstrual picture are universally recognized, especially in regard to the straight, narrow, collapsed glands. Somewhat later in the cycle, these glands become larger and gradually assume a moderate degree of tortuosity. In this, the interval stage, as in

* From the Gynecological Department of the Johns Hopkins Medical School.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

* Because of lack of space this article is abbreviated in *THE JOURNAL*. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelope.

¹ Hirschmann and Adler: *Der Bau der Uterus schleimhaut des Geschlechtsreifen Weibes mit besonderer Berücksichtigung der Menstruation*. Monatschr. f. Geburtsh. u. Gynäk. 27: 1, 1908.

² Schuck: B. Das Menstruationsgift, Wien klin. Wchnschr. 33: 395 (May 6) 1920.

the postmenstrual, the epithelium is of a distinctly non-secretory type, while the stroma is quite dense and compact

With the beginning of the premenstrual phase, there is a rather sharp flare-up in the activity of the mucosa. Then, the epithelium takes on distinctly secretory characteristics (secretory phase). It is low and frayed in appearance, and the lumen border of the cells appears to melt away in a mucoid secretion. This applies more particularly to the glandular epithelium, while that on the surface often remains rather high and intact. The glands become very tortuous, so that on longitudinal section they are rather dentate in appearance, while on cross section they are very irregular and scalloped. In other words, they suggest very much the glands of early pregnancy ("pregnancy glands" of Gebhard-Opitz), so that this stage is often referred to as the pregravid. In addition to these gland features, the pregravid idea is further borne out by the stromal changes, for the stroma cells of the compact layer not infrequently undergo a decidua-like hypertrophy.

Changes Immediately Before the Onset of Menstrual Bleeding—The changes just mentioned begin several days, sometimes as much as a week, before the onset of bleeding. Toward the very end of the premenstrual period, i. e., just before the beginning of bleeding, certain other changes are added. It is obviously difficult to be sure when menstrual bleeding has begun from the endometrium, for a certain space of time must elapse before the menstrual blood makes its appearance externally. The degree of discrepancy between anatomic and clinical menstruation unquestionably differs in different women. It would probably be rather slight in the case of the woman who menstruates freely, and who is up and about at this time. On the other hand, it is conceivable that several hours might be required for the external appearance of blood when menstruation is very scanty, and when it begins while the woman is lying down. In spite of the uncertainty as to the actual time of the onset of endometrial bleeding, one occasionally sees an endometrium which lacks the characteristics of the bleeding phase, and which, on the other hand, presents certain changes not noted in the premenstrual picture, as it has been previously described.

In our material, there are included three cases in which operation was performed at a time when menstruation was due. In all these, the function was perfectly regular, and the accuracy of the dates verified, so that there could be little doubt that the period was impending. In none of these cases, however, had there been any external bleeding. The histologic pictures presented in these three cases were strikingly similar, and may be considered characteristic of this

phase of the menstrual cycle. As far as architecture, cell type, and gland pattern are concerned, it is true that the picture is essentially that already described as premenstrual. The surface epithelium is of a moderately high, columnar type, while that of the glands is low, fuzzy, and distinctly secretory. There is no pyknosis, and no mitoses are seen. The characteristic disposal of the endometrium in three layers is noted—the compacta, the spongiosa, and the basalis.

By far the most striking feature, however, and the one which chiefly distinguishes this short phase from the remainder of the premenstrual phase, is the remarkable infiltration of the stroma with lymphocytes and polymorphonuclear leukocytes. It is true, of course, that a sporadic infiltration with such elements is observed for several days before the beginning of menstruation. This, however, is in no way comparable to the massive infiltration noted in all three of the cases in the group we are now describing. The failure to

make note of this extreme infiltration in the ordinary premenstrual endometrium leads us to believe that it is of rather rapid development, so that, in its fullest form, it is perhaps to be observed for only a few hours before the beginning of the flow. On the other hand, one cannot deny that, in such cases as the three now under discussion, the menstrual process may be already under way, even though no clinical manifestation had been observed. This point can be determined only by the study of a far larger number of cases than is now available.

The adventitious elements observed in this "infiltrative stage," as it may be called, are of various types. Large numbers of polymorphonuclear leukocytes are seen in the compacta and spongiosa, and

a smaller number in the basalis. Some of these are well preserved, others are dead or degenerating. Lymphocytes are also present in large numbers, their distribution being somewhat more uniform, so that in this respect the basalis is often quite as much involved as the functioning layers.

Not infrequently, the lymphocytes are collected in little nodular aggregations which somewhat resemble the lymph follicles found in many normal endometria.

It seems unwise, in the present stage of our knowledge, to speculate as to the purpose or significance of this premenstrual infiltration. As Heape has said in describing the analogous process in monkeys, we have here all the accompaniments of an active inflammation, and yet an inflammatory process does not exist. We can only say that the presence of this great number of infiltrating elements is apparently invoked by the degenerative—possibly autolytic—processes about to occur in the endometrium. Even in the infiltrative stage, the

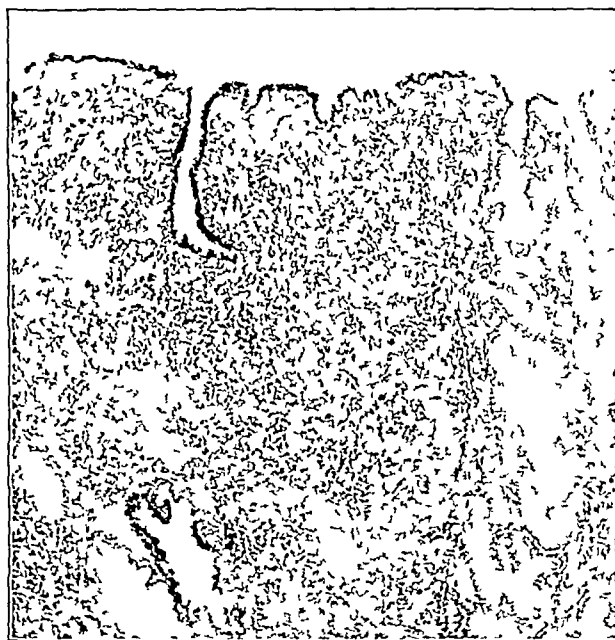


Fig 1.—Endometrium just before menstruation taken from a patient about to menstruate but not yet bleeding at time of operation. The dilated tortuous glands, the intact surface epithelium and the marked infiltration of the lymphocytes and polymorphonuclears may be seen.

upper layers exhibit an impaired staining reaction, suggesting their impending dissolution.

Strange though it may seem, circulatory changes have not been conspicuous in this stage. A moderate number of thin-walled blood vessels are seen in all three layers



Fig. 2—Endometrium on the first day of menstruation showing the compacta, spongiosa, and part of the basalis. The greatly dilated blood vessels, some of which are opening directly on the surface (rhexis), are especially prominent. There is a marked infiltration, especially of the compacta, the upper portion of which is being cast off in small particles. There are considerable individual differences in the degree of this endometrial loss on the first day.

of the endometrium. There is little evidence, however, of unusual dilatation or congestion, and no indication of rhexis.

Finally, it may be said that, in all the cases of this group, the surface of the mucosa was absolutely intact, i. e., there was no loss of tissue. On the other hand, as has already been stated, the poor staining and loss of outline of both epithelial and stromal cells in the upper layers suggested that their vitality had been profoundly impaired, and that they would soon be cast off.

The First Day of Menstruation—Four of our cases occurred within the first twenty-four hours of the menstrual flow. Here again, there was a striking similarity in the general picture, so that the cases may be described collectively. Grossly, the mucosa presented a reddish, somewhat granular appearance, and in some cases tiny areas of denudation might be observed with the naked eye. The thickness of the mucosa in our cases was usually from 2 to 4 mm., so that it may be assumed that a considerable shrinkage of the endometrium occurred within a short time after the beginning of the flow.

Loss of tissue is not a striking feature on the first day of the flow, but it is practically always observed in some degree. The surface epithelium is present over a considerable extent, but absent in many places. Even where it is intact, it is apt to give the impression of impending desquamation. One frequently sees long strips of surface epithelium, with adherent ribbons of the underlying stroma, lifted off from the surface. Aside from this, the compacta is usually still preserved,

although frequently it shows disruption in places. In one of our cases, there was a complete loss of the compacta and even a partial loss of spongiosa, so that it seems certain that individual variations occur, and that extensive loss of tissue may be noted even on the first day of the flow.

From what has been said, it is evident that loss of tissue at the time of menstruation does not usually occur in the form of a massive slough. Much more characteristically, it appears to be a crumbling, necrotic process. The designation of "sequestration," which was applied to the process many years ago by Aveling, is not inappropriate.

There is considerable difference between the surface epithelium and that of the glands, as regards their response to the degenerative influences of the menstrual process. The former retains its moderately columnar type, and shows no great degree of nuclear degeneration. Pyknosis is not observed there, in striking contrast with the epithelium of the glands. Every one of our cases showed the presence of pyknosis, at times to a most striking degree, in the epithelium of the glands. Schroder, Buttner²⁰ and others have emphasized the constancy of this change at the beginning of menstruation, and we are convinced that their observation is correct. The pyknotic granules are often very numerous. They have a strong tendency to migrate toward the basement membrane, and at times appear to pass out into the stroma.

As a rule, the pyknosis is most striking and most constant in the functioning layers, but it is commonly found also, though to a lesser degree, in the basalis. In two of our four cases a slight degree of pyknosis was observed in the stroma.

We were unable to find mitotic figures in any of our sections at this phase. This is not surprising, as the



Fig. 3—Section of another portion of the surface of the endometrium of the uterus shown in Figure 2 illustrating the crumbling away of the compacta and the marked cellular infiltration (slightly higher power).

dominant process at this stage is one of degeneration, and regenerative processes have not yet begun to manifest themselves.

The infiltration noted in the preceding stage abates somewhat with the establishment of the flow, although it is still very conspicuous

The circulatory changes of this early menstrual phase deserve especial study, because, after all, the bleeding

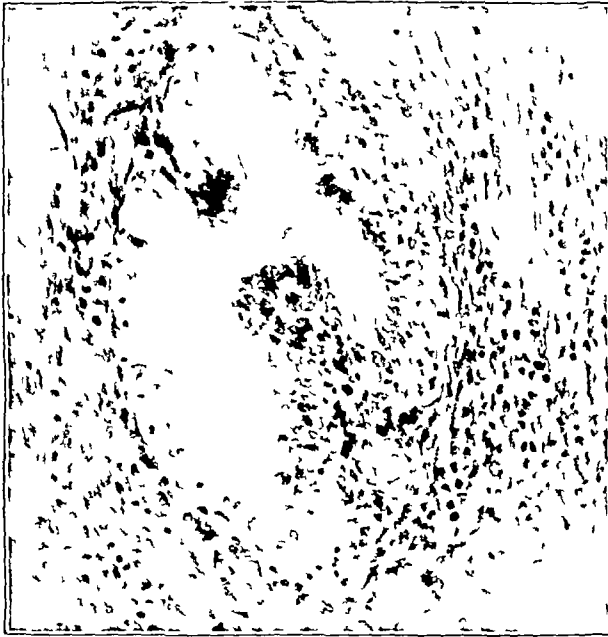


Fig 4—Endometrium (high power field) obtained on the first day of menstruation showing marked pyknosis of the glandular epithelium

of menstruation is at bottom a circulatory phenomenon. The blood vessels of the compacta are conspicuous by their large size, their thin walls, and their distention with blood. The same may be said of the spongiosa vessels and, to a less extent, of those of the basalis.

For many years it has been believed by many that the hemorrhage of menstruation occurs by diapedesis and not by rhexis. We are convinced, from our own studies, that rhexis plays a far more important role than we have believed in the past, and that it is probably the all-important factor in the production of the bleeding. The engorged, thin-walled blood channels may be traced to the very surface. When the latter is cast off, the blood channels are ruptured, discharging their contents on the uterine surface. We make no pretence of explaining the mechanism by which the degree of bleeding is regulated, but that it is due in large measure to the actual rupture of blood vessels, we feel convinced. On the other hand, it is possible that diapedesis plays a part in the process. The chief argument for this, it seems to us, is that loss of tissue and, presumably, blood vessel rupture, is not noted in the first stages of menstruation, when menstrual bleeding is already present. As already emphasized, it is hard to argue this point until more material is available. It is pertinent, however, to call attention to the fact that, even on the first day of the flow, and perhaps at its very beginning, there may have occurred a certain amount of tissue loss, perhaps enough to explain the bleeding.

The Second Day of Menstruation—Five of the patients in our series were operated on on the second day of menstrual bleeding. In every one of these, extensive loss of tissue was noted. The surface epithelium and the compact layer were invariably

absent, and there was in all of the cases a loss of at least the upper stratum of the spongiosa. The tissue thrown off is first destroyed by the peculiar degenerative process described in the preceding section. The degenerated tissue is thrown off in pieces of various size. Some are very small, consisting of perhaps only a few, granular, disintegrating cells. At times, again, there are long strips of degenerated mucosa, a considerable thickness of the compacta often being loosened with its covering epithelium.

The same fragmentary desquamation is seen with the spongy layer. By the end of the second day, it is usual to find only the deeper portions of the spongiosa left. Only the fundal stumps of the glands remain, the more superficial portions having been cast off. Beneath the pale-staining, degenerated remains of the spongiosa there are seen the more sharply staining gland lumina of the basalis. There is nothing in the appearance of either the glands or the stroma of the basal layer to make one think that it will be cast off, and, as a matter of fact, no such casting off of the basalis has been observed.

The pattern of the basal glands is, of course, quite different from that noted in the functioning layers before these are cast off. Instead of the premenstrual pattern exhibited by the latter—the large, tortuous glands, with low secretory epithelium—the basal glands of the second day are characteristically small and narrow, while the epithelium is sharply outlined, with no suggestion of secretory activity. It is low columnar in shape, without either mitosis or pyknosis.

The portions of the spongiosa still remaining show a marked degree of infiltration, as does also the basal layer. The degree of infiltration is, however, less than



Fig 5—Endometrium on second day of menstruation showing the basalis with only a small part of the spongiosa intact. The compacta and the greater part of the spongiosa have been cast off.

in the early stages. Lymphocytes are the predominant cells, although the spongiosal remnant shows a moderate number of polymorphonuclear leukocytes as well.

The blood vessel changes are similar to those already described for the earlier stages. The superficial vessels

have, of course, been lost with the compacta. The vessels remaining in the spongiosa show much dilatation, and their walls are very thin. Actual rupture of these vessels on the denuded surface can be demonstrated, so that there can be no doubt as to the importance of rhexis in the production of the menstrual hemorrhage. The blood vessels are much less conspicuous than those of the upper layers. Their walls are also quite thin, but they show only a slight dilatation.

Third and Later Days of Menstrual Bleeding—Two uteri of our series were removed on the third day of bleeding, and one on the fourth. In a general way, it may be said that the most conspicuous feature of the third day is the beginning of definite efforts at regeneration of the endometrium. The entire mucosa, with the exception of the basalis, has been thrown off, although degenerated portions of spongiosa are still to be seen here and there. The poorly staining epithe-

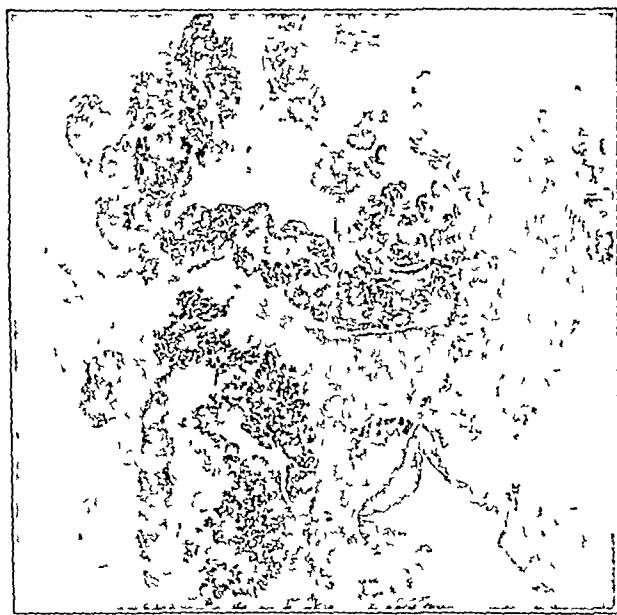


Fig. 6.—Blood clot obtained from the cavity of the menstruating uterus whose endometrium is shown in Figure 5. Cast-off particles of the upper two layers of the endometrium are seen, including not only surface epithelium, but also considerable stroma and numerous glands.

hum of the spongiosal portions of the glands presents a sharp contrast to the clearly outlined, sharply staining epithelium of the basal portions. There can be no doubt that it is the latter which plays the most important part in the restoration of the surface epithelium. The stumps of uterine glands form many U-shaped depressions on the denuded surface. The epithelium of these depressions is soon continued over the interglandular areas of the surface. This merging of the epithelial coverings of the glands quickly covers the surface, so that, even on the third day, long stretches of intact surface epithelium may be seen. This stage Schroder speaks of as the "status post desquamationem et regenerationis."

The rapidity of this epithelization is, indeed, one of the most striking aspects of the entire problem. At times it appears to be accelerated by the configuration of the gland lumina. For example, not infrequently a long narrow gland will be seen extending parallel with the surface. The loss of the one wall of the

gland will leave the long, epithelial, deeper wall of the gland to help form the new surface epithelium.

In spite of the rapid regeneration of the epithelium, one is struck by the absence of mitoses. This is difficult to explain. It was this fact, especially, which led Heape to the assumption that the new surface epithelium may be formed by the metaplasia of the upper stratum of stroma cells, as has already been mentioned. It may be recalled, also, that Westphalen believed that restoration was accomplished, in part at least, by the reimplantation on the surface of the portions of tissue that had been lifted away in the early stages. For such a view, there is no evidence whatever.

Pyknotic changes are still prominent in the degenerated spongiosa remains. The infiltration, so prominent in earlier stages, has in large measure disappeared, although a slight amount is still present in the basalis. The blood vessels of the latter still show some dilatation, and evidences of rhexis are to be seen here and there.

The Endometrium Just After the Cessation of Bleeding—Attention has already been called to the rapidity with which epithelization proceeds. The examination of uteri removed immediately after the menstrual period invariably reveals a complete surface layer, with the usual characteristics of the postmenstrual epoch—the straight, narrow glands, the low, cuboidal epithelium, and the compact stroma. Whereas mitosis is never observed during menstruation, it becomes very pronounced just after the flow. Why this should be so, we cannot say, as the surface is now complete, and the further development of the endometrium rather slow and gradual until the advent of the next secretory phase.

Nevertheless, mitotic figures are richly distributed in the gland epithelium, although they are absent in the surface layer. The stroma likewise exhibits rather frequent mitoses. We have found evidence of mitotic activity very marked as early as two days after the cessation of the bleeding, but it has been present, also quite markedly, in other cases on the fourth or fifth day after bleeding. According to Westphalen, mitosis is to be found from the eighth or ninth up to the seventeenth or eighteenth days of the cycle. As already stated, however, we have found it immediately on the cessation of the period and other investigators have made a similar observation.

Microscopic Study of the Menstrual Discharge—As a supplement to the histologic studies already given in detail, we have recently made a study of the menstrual discharge in a few cases, in an effort to ascertain whether or not particles of cast-off endometrium may be found in it. In a small series of cases, the menstrual discharge was obtained by directing women in the outpatient clinic to place their napkins at once into a vessel of formaldehyd solution with which they were provided. We may say that this method proved disappointing, chiefly because any bits of granular mucosa cast off from the uterus were apparently autolyzed or otherwise destroyed during the possibly long interval before fixation, so that microscopic study showed very few tissue elements.

The results were quite different in the few cases in which the menstrual blood, sometimes clotted, was taken directly from the uterine cavity of those patients on whom hysterectomy had been done. Incidentally, we may state that this is not always possible, because the uterus is often found quite clear of blood even during

active menstruation, thus illustrating the excellent natural drainage of the uterine cavity. Figure 6, however, shows clearly the presence in the menstrual blood of long strips of surface epithelium, as well as of portions of gland tissue from the compacta. In other words, we may say that, to all intents and purposes, we were able to find in the menstrual discharge the portions of mucosa which a study of the uterus had shown to be lost during menstruation. These findings impress us as offering strong confirmatory evidence of our views as to the menstrual loss of endometrium.

Somewhat similar studies have been made by other investigators. Von der Leyen²¹ found portions of tissue varying from individual cells to bits of 1 cm size, often with glands. She concludes that such loss is physiologic. Lindner,²² in the study of thirty-three cases, reached similar conclusions. Most of her patients were young virgins, whose menstrual napkins were carefully investigated for bits of tissue. In fifteen cases in which abortion could be definitely excluded, small, firm portions of tissue, even up to 4 cm in diameter, were found. It is of interest to note, as confirming our own studies on the uterine wall, that all these portions of tissue were recovered on the first two days of the flow. Particles found later on were so degenerated that no structure could be seen. Sekiba's²³ very recent work along the same lines adds further confirmation to the studies already cited. In a series of fifteen patients, two showed large shreds of tissue, one on the first and one on the second day. In six other cases, portions of fairly large size were passed, while in the remainder very little or none was found.

SUMMARY

While there is little difference of opinion at present concerning the uterine changes in the postmenstrual, interval and premenstrual phases, there has been much discussion for the last fifty years concerning the behavior of the endometrium during actual menstruation. The chief point at issue has been as to whether or not all or a part of the uterine mucosa is cast off. The paucity of reliable investigations on this point has been due in large measure to the aversion of surgeons toward operating on menstruating women.

Our material consisted of twelve uteri removed during some phase of actual menstruation, together with a number removed immediately before or just after menstruation. The study of this material, which we believe has been studied by methods eliminating errors of technique, convinces us that extensive loss of tissue is the rule during menstruation, as Schroder has demonstrated. The entire superficial or compact layer, as well as most of the deeper or spongy layer, is thrown off. It is possible that there may be exceptions to this, but we have not observed them. On the first day, the surface of the mucosa may be quite intact, but more commonly it shows beginning loss of tissue. By the second day, the throwing off has become very extensive, all the compacta and most of the spongiosa being gone. Regeneration changes are usually evident on the third day, and may be quite marked.

The desquamation of mucosa is preceded by extensive infiltration with polymorphonuclear leukocytes and lymphocytes, this infiltration is marked for a short

time before the actual clinical onset of menstruation. The throwing off of the mucosa does not usually occur as an extensive shedding in large masses. It is a sort of crumbling, molecular process, small strips and bits of granular degenerated mucosa being cast off until only the basalis, and perhaps a few spongiosal remnants, are left. The desquamated endometrial portions may be recovered from the menstrual discharge, as we have shown. Pyknotic changes are prominent at the beginning of menstruation.

Regeneration is remarkably rapid, especially the epithelization of the surface. The source of the new epithelium is chiefly the epithelium of the basal stumps of the uterine glands. Strange to say, mitosis is not a very frequent occurrence, appearing to a greater extent when the epithelial layer is already complete.

While diapedesis may, perhaps, play some part in the mechanism of the menstrual bleeding, rheus is certainly



Fig 7—Endometrium on the third day of menstruation showing practically only the basalis left intact. The epithelization of the surface has already begun by the outgrowth of epithelium along the surface from the remaining glands.

the most important factor. It can be demonstrated histologically, although its occurrence is self-evident, in view of the extensive tissue loss associated with menstruation.

ABSTRACT OF DISCUSSION

PROF. GEORGE W. BARTELMER, Chicago. In few fields in histology is our knowledge more inadequate than in that just presented. The difference of opinion concerning what actually happens is due largely to the fact that most observers have studied only the endometrium of the first day of the flow, and have found little or no loss of epithelium. In the course of some studies that Dr. Culbertson and I are making, we have found even on the first day, extensive areas of necrosis in the compacta. On the second day the degeneration is always great. As Dr. Novak has said the findings in monkeys are particularly illuminating in this respect because in these the destruction cannot be attributed to disease, trauma or the like. Furthermore, we can say confidently that there is no essential difference between the menstruation of apes and that of the human species. The problem suggested by Dr.

²¹ Von der Leyen. Zur normalen und pathologischen Anatomie der Menstruationsabgänge. *Ztschr. f. Geburtsh. u. Gynäk.* 59: 113, 1907.

²² Lindner, K. Histologische Untersuchungen der physiologischen Menstruationsabgänge. *Monatsschr. f. Geburtsh. u. Gynäk.* 57: 119 (March) 1922.

²³ Sekiba. Zur Morphologie und Histologie des Menstruationszyklus. *Arch. f. Gynäk.* 121: 36, 1923.

Ries is in order here, namely, the relation of ovulation and menstruation. We know from the work of Leopold and his students that menstruation may occur in the absence of ovulation. They reported at least eight crucial cases selected from an enormous clinical material. The discrediting of their work, because they misinterpreted the age of the corpus luteum, has resulted in the neglect of their proof that menstruation may occur in the absence of ovulation. We know from Corner's work that in certain monkeys a typical period may occur at the expected time and yet no corpus luteum or even a large follicle be found. I suggest that there are two kinds of menstrual periods, those preceded by ovulation and those independent of it. In the former, the endometrial hypertrophy is much greater than in the latter. The study of the latter should throw more light on the other factors concerned in menstruation. It is even possible that we may find corpora lutea which have not been activated, much as we know of perfectly normal thyroid glands which do not function because they have not been activated by the hypophysis. We may then find a mild endometrial reaction in the absence of a corpus luteum or in the presence of an inactive one. Only the finding of a maximal endometrial reaction in the absence of a corpus luteum would necessarily disprove this hypothesis. That would also disprove the causal relationship between the uterine changes and the corpus

DR. EMIL NOVAK, Baltimore. Dr. Bartelmez has brought up the question of the relation of menstruation and ovulation. It is, of course, well known that ovulation can occur in the absence of menstruation. This is best illustrated by the fact that pregnancy frequently occurs during the amenorrhea that is so common during lactation. The same possibility exists during the "dodging period" of puberty or the menopause, as well as in the amenorrhea seen with certain endocrine conditions such as adiposogenital dystrophy. On the other hand I know of no evidence to indicate that menstruation in the human female can occur without a preceding ovulation, i. e., without the formation of a corpus luteum. It is true that in the case of monkeys the possibility of this has been suggested by the work of Corner and others. In women, on the other hand, the evidence is still altogether against this point of view, although it would be rash to deny its possibility in view of the fact that our knowledge of the whole subject is still obscure on so many points.

Automobile Deaths in Ohio in 1923—According to statistics compiled by the state bureau of vital statistics for 1923, Ohio's death rate due to automobile accidents was 17.6 per hundred thousand population as against a rate of 13.8 for 1922. There were 1,078 killed in automobile accidents in Ohio in 1923 as against 833 killed in 1922, an increase of 245. This does not include 157 killed in automobile collisions with trains and interurban cars which are charged to railroad accidents. Higher mortality from automobile accidents has been a factor in increasing the general death rate of Ohio during 1923.—*Pub. Health Rep.* 39:755 (April 11) 1924.

A CASE OF MULTIPLE CUTANEOUS LEIOMYOMA*

KENDAL P. FROST, MD

LOS ANGELES

Cutaneous leiomyoma is one of the great rarities of dermatologic entities. In 1907, Beatty¹ reported a case and stated that it was the twenty-seventh to be reported. Since the publication of his article, ten other cases have been reported in the available literature. Four other titles have been found, but the journals are not available, two of these may bring this total to twelve. Heidingsfeld² reported two cases, one probably arising in the smooth muscle cells of the vascular walls. MacLeod³ reported a case in 1908, Fritz,⁴ two cases in 1910, Engel,⁵ one in 1912, Abramson,⁶ one in 1913, Sequeira,⁷ one in 1914, and another in 1920. Ormsby presented a case before the Chicago Dermatological Society, in 1923. This brings the total cases in the available literature to thirty-seven, or probably thirty-nine, counting the cases of Roth⁸ and Dagonet,⁹ and the subject of this report.

Four reports, in this period of fourteen years, are by British authors. It seems unlikely that instances of this disease are more common in England than elsewhere. Probably more cases have occurred than are reported.

Solitary subcutaneous leiomyomas are probably different in their etiology and clinical aspects, and are not considered in this review of the literature.

REPORT OF CASE

A Mexican woman, aged 28, married, came under observation in April, 1922, complaining of a painful skin condition of eight years'

standing. Except for the condition then present her health had always been excellent. Both parents were living and well, her husband was well. She had had two children, one of whom was living and well, the other died in infancy. One brother and one sister were living and well, two died of acute illnesses the nature of which was not known.



Fig. 1—Lesions on back.

* Read before the Section on Dermatology and Syphilology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

1. Beatty, A Case of Multiple Leiomyomata of the Skin. *Brit. J. Dermat.* 19:110 (Jan.) 1907.

2. Heidingsfeld, M. L. *Mycosis Cutis* J. A. M. A. 48:562 (Feb. 16) 1907.

3. MacLeod, A Case of Multiple Leiomyoma. *Brit. J. Dermat.* 20:54 (1908).

4. Fritz, Zwei Fälle von multiplen Kautismyomen. *Arch. f. Dermat. u. Syph.* 99:45-49 (1910).

5. Engel, Un caso di leiomyoma cutaneo multiplo. *Gior. ital. d. mal. ven.* 53:728-733 (1912).

6. Abramson, I. A. Multiple Leiomyomas of the Skin. *Russk. Vrach.* 12:1614-1652 (1913).

7. Sequeira, Leiomyoma. *Brit. J. Dermat.* 26:331 (June) 1914.

8. Roth, Leiomyoma Multiplex Dorsi. *Escies. Dermat. Urol. Sect. Roy. med. Soc. Budapest.* Feb. 24, 1908.

9. Dagonet, Ueber die Entstehung der Hautmyome. *Festschr. f. Hans. Chir.* 1903, pp. 1-10.

The first indication of her condition was spasmodic pain in the back. At first, the attacks were mild and infrequent. They gradually and progressively became worse until the pain was excruciating, and was started by the slightest stimulation of the involved area. The appearance of the skin had changed during the same period, but the patient was rather uncertain about its development. The change first appeared in the area of the pain, and now involved a rather large area on the right lumbar region. Scattered patches had developed more recently on the right upper part of the chest and on the right arm, and were not painful. There were no abnormalities except in the skin and in the areas mentioned. Every little while, the patient seemed in great pain, putting her hand to her back and occasionally shedding tears. These paroxysms lasted two or three minutes, after which she seemed comfortable. On the back, over the lower right part of the chest and upper lumbar region, was an area about twice the size of a man's hand where the skin was thickened and slightly darker than normal. Throughout this area were small, soft masses slightly darker or unchanged in color from the surrounding skin. In addition there were scattered, discrete, hemispherical, coral pink, shiny tumors



Fig 2—Scattered lesions on arm and chest

about the size of small peas. Merely touching the skin near these tumors caused an attack of pain. No contractions in the tumors themselves could be seen. Over the upper right part of the chest, and the right shoulder and arm were thickened patches scattered as far as the wrist. There were no small, pink nodules in these areas.

A biopsy was performed, April 28, 1922, one of the pink tumors being removed. Microscopically, the tumor was composed of bundles of smooth muscle cells cut in different directions, showing that they interlaced throughout the mass. Between the bundles of muscle cells were bundles of collagen fibers, which passed out at the periphery into the corium and subcutaneous tissue without the formation of a definite capsule. There were no glands to be seen in the section. At one side of the tumor was a hair follicle.

The diagnosis was multiple cutaneous leiomyoma.

On account of the diffuse nature of the process, excision was not practical. On several occasions, the patient was given one-half skin unit of unfiltered roentgen ray, which seemed to ameliorate the pain. Irradiations with the Alpine sun lamp unquestionably increased the pain.

ABSTRACT OF DISCUSSION

DR OTTO H FOERSTER, Milwaukee. Cutaneous leiomyoma multiplex is probably not as rare as the few cases reported would seem to indicate and with the attention that has been called to this condition by Dr Frost and by Dr Ormsby, I believe we shall hear more of it in the future. It has been

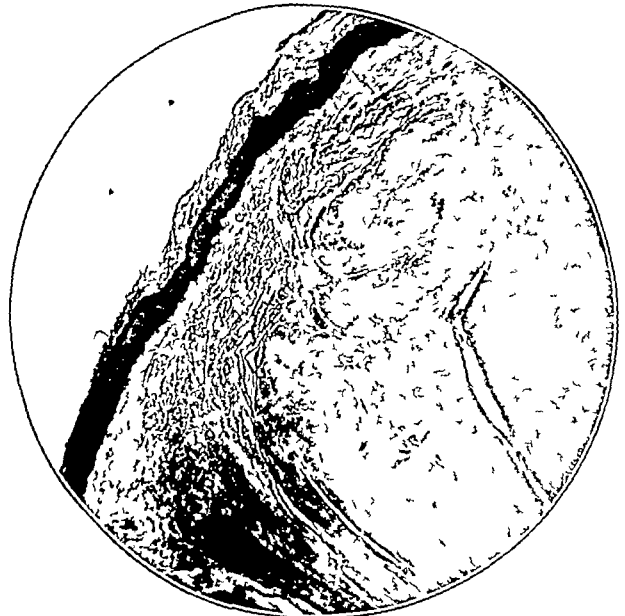


Fig 3—General arrangement of the tumor mass, hair follicle at lower portion of the section

pointed out that tumors of the superficial type, which were discussed here, arise from the arrectores pilorum as well as from the muscular coats of the blood vessels. The group in which we have the single tumors is of deeper origin arising chiefly from the tunica dartos, and occur wherever

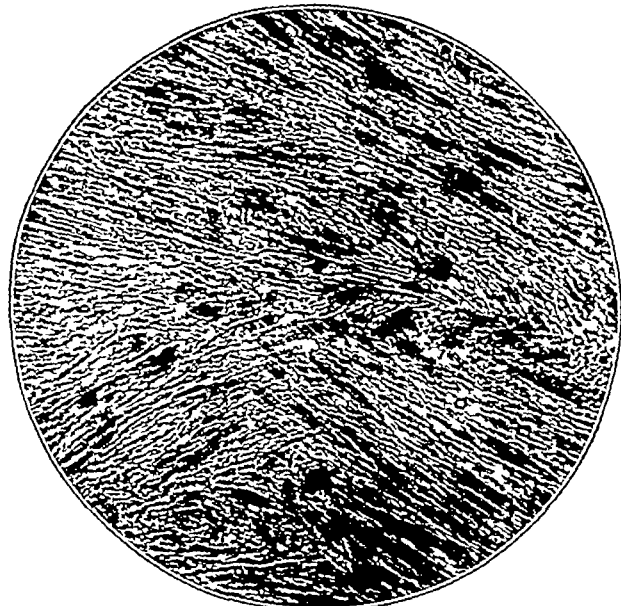


Fig 4—Part of Figure 3 under high power showing typical smooth muscle nuclei

that is found, on the genitalia and mammae. The hyperplasia of the fibrous tissue and of the vascular and lymphatic elements causes the formation of fibromyomas, hemangiomyomas and lymphangiomyomas. The lesions of leiomyoma multiplex bear a resemblance to linear types of nevi, and their presence may be suspected whenever soft, rather spongy,

shiny, smooth, elevated, brownish red nodules of about the shape and approximate size of a grain of barley are found aggregated in small groups or patches. The sites of election are the cheeks, neck and trunk, and paroxysmal pain is a prominent symptom, being present in about one half of the cases. Of course, microscopic examination is necessary for a positive diagnosis.

DR. FRED WISE, New York. I should like to add two cases to Dr. Frost's presentation, one of which occurred as a form of a linear nevus of the arm. The diagnosis of myoma cutis was confirmed by the microscope. The other case occurred in a young woman, and the condition was practically universal. No biopsy was made, and we were not absolutely sure of the diagnosis, but everything seemed to point to a generalized leiomyoma of the skin. I am hardly in accord with the idea that the disease is more common than we are led to believe by the number of cases encountered thus far. I think it is an extremely rare condition.

DR. KENDAL P. FROST, Los Angeles. Since this paper was written, two more cases have been seen in Los Angeles. One case had been confirmed microscopically, the other had not. In my case, pain was a striking feature. I rarely see patients in greater pain than this woman had during her paroxysms. She wore a very loose waist and practically nothing else over her back, and said she could hardly do any washing because the movement of the back would bring on a paroxysm of pain.

AGAIN, THE OPERATION FOR HALLUX VALGUS*

ALBERT H. FREIBERG, M.D.
CINCINNATI

It is not to be gainsaid that the ideal operation for hallux valgus would be one that would leave the foot as nearly like a normal foot as possible, this refers at once to the external conformation, intrinsic structure, mobility up to the normal limits, and function which would combine efficiency and complete comfort. If there

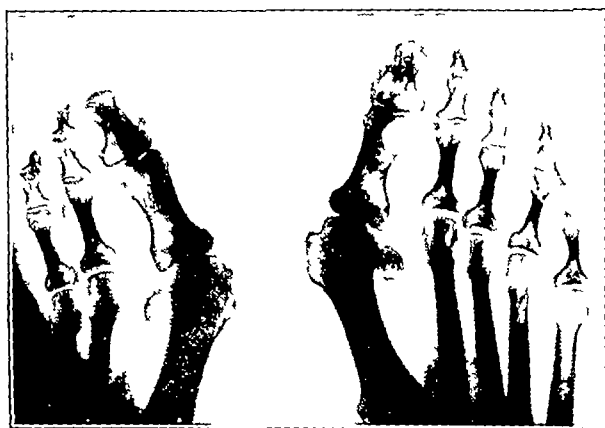


Fig. 1—Before operation

is occasion to add anything to a literature of respectable proportions, it must lie in the fact that there is reason for dissatisfaction with what has been heretofore proposed or practiced. I know of no procedure which, at least from a theoretical point of view, approaches the ideal to the extent that is reached by the plastic operation of Silver.¹ He holds the chief abnormality to lie

in the alterations of the capsule of the joint, together with a degree of hypertrophy of bone on the mesial side of the metatarsal head which is often absent altogether. It must be granted that the joint surfaces themselves present no alterations of consequence except in cases of osteoarthritis of this joint, and in this event we are confronted with a situation that must be acknowledged as not remediable by operation at the present time. Although I am not able to say that I have thus

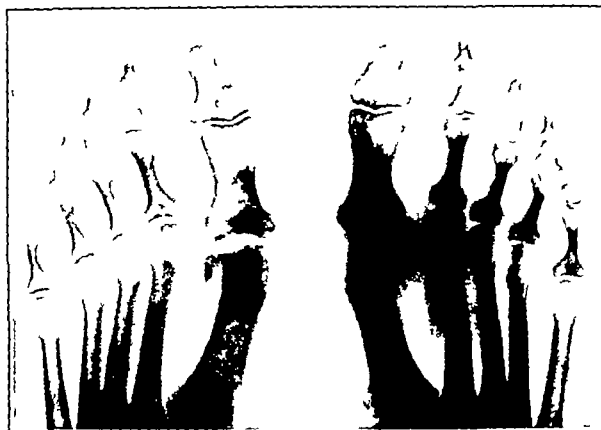


Fig. 2—Three months after operation, on the right a spur projecting from the lateral aspect of the metatarsal. It has the appearance of new bone and may be the result of regeneration of a bone particle. At the time it was believed that the operation had been properly done.

far done the operation of Silver, it does not seem to me to meet the practical need, however much it may respond to the demand for a truly anatomic restoration. It restores to the individual his previous situation more nearly than any other operation. However, his previous condition was one in which the deformity was produced and, so far as we know, without the operation of any causes that are not acting in many other individuals who remain free from trouble. There is every reason to believe, therefore, that after this operation and in order to retain its advantage, the patient must be resigned to the idea of caring for his feet to a degree unnecessary for other persons, lest the deformity recur and with it the need for further operation. It must be remembered that the majority of patients who require operation are women, and that they come to us asking not for restoration of form or function, as a rule, they approach us rather in order to be relieved from suffering and disability and with a dread of being condemned to wear shoes which they regard as an affliction in themselves, however perverted we may regard this notion, from the physiologic standpoint.

The most helpful view of the situation from the anatomic aspect seems to me to be that of Painter.² He looks on the condition as a shoe deformity, to be sure, but as probably dependent on an abnormal proportion of the different segments of the foot, perhaps an abnormal length of the metatarsal in one or both feet. This would have the effect of carrying the metatarsophalangeal joint too far forward in a shoe that might otherwise be of appropriate size for this foot. He concludes that the Hueter operation, which shortens the inner side of the foot by removing the metatarsal head, is the logical operation, and that the experience with it has been satisfactory. This is, in fact, the testimony of those who have done this operation with frequency.

* Read before the Section on Orthopedic Surgery at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

¹ Silver, D. J. Bone & Joint Surg. 5: 225 (April) 1923.

² Painter, C. F. Boston M. & S. J. 17: 4: 636 (May 4) 1916.

Were it not for the fact that with most of such cases there are made qualifying statements in respect of a certain number of the cases, there would be no justification for this discussion. Printer remarks on "the tendency of the phalanx to ride up leaving the toe out of contact with the floor when the patient stands." He proposes that this be avoided by the use of a suitable splint for two weeks following operation.

As a matter of fact, I have seen a number of instances, during the course of years, in which there was abundant cause for dissatisfaction by reason of the limited mobility in the joint, which had been the seat of a Hueter operation, in some instances, a bursal flap had been used with the express purpose of avoiding this. For two of the early cases of unsatisfactory character I was responsible although I have never used the bursal flap. I believe it both unnecessary and improper to utilize for such a purpose tissue that is the seat of pathologic change. The study of the unsatisfactory results that I have been able to follow has convinced me that when the main steps of the Hueter operation have been tolerably well done, limitation of mobility of an objectionable degree afterward may usually be ascribed to certain shortcomings which appear to have been proved by the means that were used to overcome them. In addition to the limitation of mobility, two other shortcomings of the Hueter operation have been pointed out: the shortening of the first toe and the continuance of its abducted position. The shortening of the first toe should be looked on rather as an advantage than otherwise, for the reason that has been mentioned, unless it is unnecessarily great. When this occurs, it is to be looked on as a fault of technic, easily to be avoided. The loss of support that is incurred by the sacrifice of the distal end of



Fig. 3—Metatarsal bone before a secondary operation spur on lateral aspect of metatarsal head probably left behind as the result of incomplete procedure.

experience, some years ago, in a case which was of more than ordinary interest to me and which I have been able to follow to the present time. This patient required the operation by reason of marked suffering, there was considerable overgrowth on the inner side of the metatarsal head (Fig. 1). The usual Hueter operation was done, and, so far as I knew, in precisely similar

manner on the two sides. The operative recovery was prompt and flawless, so far as the wounds were concerned. The right foot was very comfortable from the beginning, and has remained so, the seat of operation in the left foot, however, was painful continuously for about two months. After this time, the pain subsided, but the mobility of the joint remained definitely behind that of the right side. An examination of the patient, made one year after operation, revealed her exceedingly

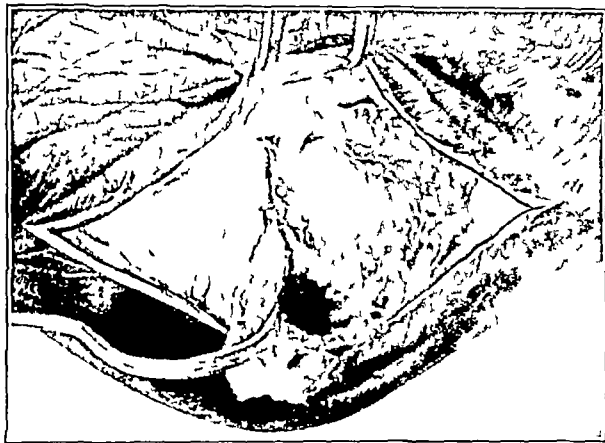


Fig. 4 Dissection of semicircular flap so as to expose head of metatarsal bone.

well pleased with its result, she was playing tennis regularly, and boasted that, in spite of injunctions to the contrary, she was wearing shoes of the most stylish (and objectionable) shapes with entire comfort and great satisfaction.

A roentgenogram made of both feet of this patient three months after operation showed that whereas the end of the metatarsal in the right, painless, foot was smooth, on the left side the end of the metatarsal presented a conical bony projection on its lateral aspect which came into contact with the articular surface of the phalanx. It was evidently to be looked on as the cause of the distress that was produced by motion, and also, in all probability, as the explanation of the limitation of motion here found. The examination of the roentgenogram does not make it certain to me whether this projection represents bone that I failed to remove at the time of operation, or whether it represents the reattachment of a fragment that had been left in the wound. I incline strongly to the first explanation. At the same time it must be acknowledged that fragments that are left behind in such a wound may act as grafts and by their proliferation give rise to mechanical hindrance to motion afterward. In several instances that I have been able to observe by reason of their presenting for the purpose of reoperation, the original procedure having been done by other hands than mine, a similar situation has been observed, it has been apparent that either the lateral edge of the metatarsal had been imperfectly trimmed, or irregular bone outgrowths, such as might have had the regeneration of loose bone particles as their cause, were present (Fig. 3).

In consequence of the experience that I have had, I have set up for myself certain requirements for satisfactory operation, employing the principle of Hueter. Without going into unnecessary detail, I will mention them in order, together with the means employed to meet them.

OPERATION REQUIREMENTS

1 The capsule of the joint should be opened in such a way as to provide a plastic flap which may be utilized for maintaining the adducted position of the toe. This is accomplished by making a semicircular incision into the insertion of the capsule to the metatarsal bone, the convexity being toward the heel of the foot. This is dissected with the knife, downward toward the toe, thus exposing the metatarsal head. With knife and periosteal elevator, the head of the metatarsal is thoroughly freed, and especial care is devoted to its lateral aspect (Fig 4).

2 After any bony outgrowth on the mesial aspect has been chiseled off, the head of the metatarsal must be thoroughly exposed in the wound so that it may be properly dealt with. This is facilitated by the use of a ribbon retractor of sheet copper or, as has been recently found convenient, by employing a Parham band for this purpose. Bent into U shape, the band is passed over the head of the bone, the ends bent backward over the skin. Thus is effected a very satisfactory exposure of the metatarsal head and, after its removal, of the joint cavity.

3 After the removal of the head, the end of the metatarsal should be reshaped. The part of the head that is covered with cartilage is cut off with a sharp osteotome. The sharp edge that is left is trimmed with cutting forceps, and the end of the bone made smooth and rounded by means of a file, curved on the flat. Unless the end of the metatarsal bone is given an appropriate shape, it may not be expected to have a satisfactory mechanical function, and plantar flexion, especially, will be interfered with. It is on this account especially important that a spur of bone should not be left behind at the lateral side of the metatarsal head, and that the inferior or plantar margin of the cut surface of the bone be well rounded off, otherwise the sesamoids are likely to be interfered with during the action of the flexor hallucis brevis. In order that the

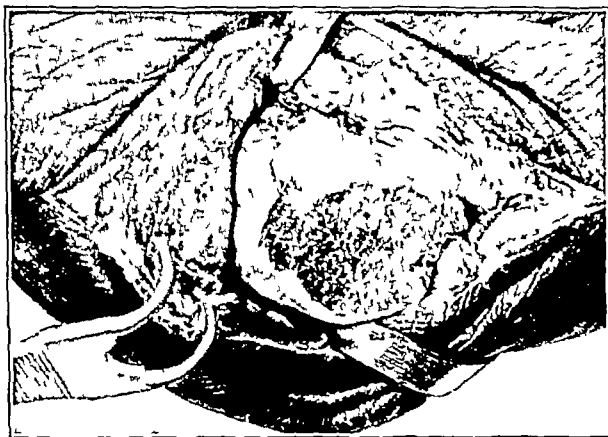


Fig 5—The band retractor in place the medial outgrowth having been chiseled off

end of the metatarsal may thus be dealt with, the thorough exposure in the wound is of primary importance.

4 Care should be taken to remove all bone particles from the wound. After the visible fragments are lifted from the wound, it is flushed with a salt solution for this purpose.

5 The tendon of the extensor hallucis longus should be divided. By turning back the dorsal lip of the wound, the long extensor is easily exposed. It may be divided without hesitation and left thus, sufficient extensor power is provided by the separate slip of the extensor brevis.

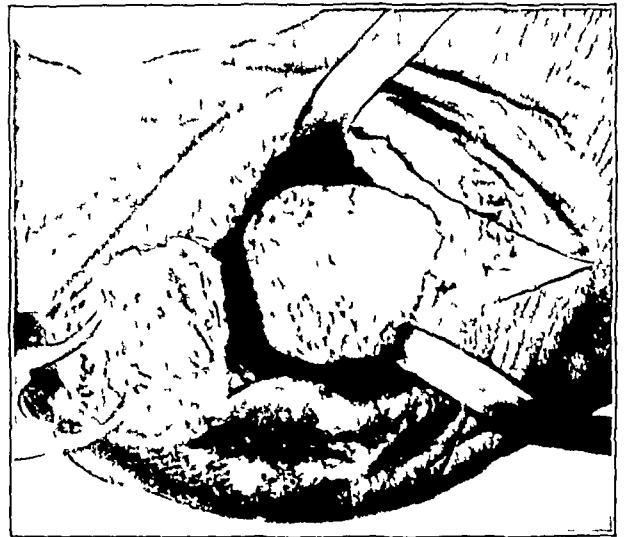


Fig 6—After removal of the metatarsal head the end of the bone having been reshaped with bone forceps and file

6 The capsule flap should be overlapped to a degree providing for the maintenance of the adducted position of the toe. It is held in this position by placing several mattress sutures of silk (Fig 7).

7 The wound having been closed, a splint should be applied for ten days in order to provide for the firm adhesion of the capsule flap. The splint is applied after the dressing has been placed. A wooden tongue depressor is used. It is held against the mesial aspect of the foot by means of adhesive strips, pressure on the wound is avoided by placing a felt pad against the foot, proximal to the wound. The end of the toe is brought over to the splint by means of a narrow adhesive strip, the lateral edge of the nail being protected by a thin piece of felt.

8 It is important to cultivate amplitude and power in flexion of the toe. Motion in flexion is begun on the tenth day. The splint is left off at this time. After recovery has taken place and for several months, at least, exercises in active flexion should be insisted on. While it is highly desirable that the patient should wear shoes of normal shape, I know that a number of my patients have disregarded this injunction without suffering in consequence. I am far from being satisfied that this should be done. I feel certain, however, that the observance of the details described above has made the results of this operation much more satisfactory as concerns both form and function.

ABSTRACT OF DISCUSSION

DR JOHN L. PORTER, Chicago. Any operation for hallux valgus that removes the head of the metatarsal bone is absolutely unnecessary and unjustifiable. When Dr. Freiberg spoke about operations that take off an oblique piece of the head of the first metatarsal, he referred to me. Fourteen years ago after seeing all the poor and very bad results from operations for hallux valgus particularly from removal of the head of the first metatarsal, which used to be the

favorite operation, I came to the conclusion that the indications for operation in hallux valgus were three chiefly, the relief of the deformity, the maintenance of motion in the joint, and the reconstruction of the transverse arch, about which nobody has said a word. In every case of hallux valgus, the patient not only suffers from pain of hallux valgus, but also suffers from metatarsalgia, for every one of them has complete flattening of his transverse arch. Taking off the first metatarsal makes it impossible to restore the transverse arch and keep it up there. The operation which I began using fourteen years ago and the description of which has been published twice, with modifications, was, briefly, this: The capsule is opened longitudinally in the straight line, the capsule is carefully dissected from the head of the bone because it is always adherent to its upper surface, and the head is completely exposed, then with a sharp chisel not only the protuberance, but one third of the head of the metatarsal is chiseled off smoothly and then the first phalanx, which has been going off at an angle is straightened. The success of that operation depends on how the first phalanx is held in position after the bone is taken off, and the simplest way I know of is the simple sewing up of the incision in the opposite way from which it is made. The incision, made longitudinally, is sewed up by carrying a mattress suture through the joint from one angle to the other while the assistant holds the phalanx in proper position. The knot is then tightened, and if a proper amount of bone has been taken off, the toe will remain perfectly straight, and the transverse arch of the foot is preserved. If we put on

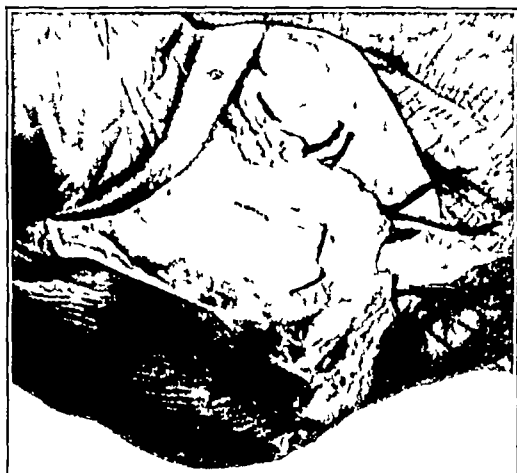


Fig 7—Capsule flap fastened by mattress sutures so as to maintain adduction

the plaster-of-Paris dressing and a pad carefully shaped to fit the transverse arch, when the patient gets back to bed she has not only less hallux valgus, but has a restoration of her transverse arch and is through with her metatarsalgia.

DR MELVIN S. HENDERSON, Rochester, Minn. I would agree with Dr. Freiberg that the operation of choice is the removal of the head of the metatarsal bone. We have had rather an extensive experience. Fifteen or sixteen years ago, Dr. C. H. Mayo described an operation which has since become generally known in this country as the Mayo operation. It is a modification of the Hueter operation. No one operation gives 100 per cent good results, but taking it by and large, the operation has been one of the most successful operations in the whole field of surgery. Excision of the head of the metatarsal is said to weaken the transverse arch. All this talk about the transverse arch is more or less nonsense. It does not make much difference what one does to it. It exists only in anatomic drawings, etc. The question of putting the flap in after excision of the head is a minor point. It has the one advantage of stopping hemorrhage, and so far as limiting the motion, I feel sure that it does not do this. We have tried these different operations, and

inevitably drift back to this operation described by Dr. Mayo years ago.

DR ALBERT H. FREIBERG, Cincinnati. Dr. Porter errs in stating that he restores the transverse arch, because there is no such entity. The transverse arch is maintained wholly by muscle action. When the toes are well flexed there is a transverse arch, and when they are extended, it disappears. I should like to see some of Dr. Porter's restored transverse arches.

THE PHYSIOLOGY OF GLOBUS HYSTERICUS*

EDMUND JACOBSON, M.D., PH.D.
CHICAGO

It used to be the fashion, when a symptom was found to be "functional," to tell the patient that there was nothing the matter with him, he should "go home and forget it." "Nothing anatomically wrong," said the neurologist, and that was all there was to it. But times change, and students are finding that disordered symptoms may be studied scientifically, even in the absence of structural pathologic changes. An interesting example is "globus hystericus."

The patient has the feeling of a foreign body in his throat, yet none can be found. On examination with proper instruments, nothing wrong is noted in the throat or speech apparatus. A sound passed down the esophagus may meet no unusual resistance, and the esophagus may present nothing more than a little redness or hyperemia (Rosenheim). It is generally agreed that "globus" occurs not alone in hysterical patients, but in many other conditions as well, and the descriptions given of the sensation often vary considerably from the classical expression, "ball in the throat."

Important is the matter of finding an objective means of investigation. To rely chiefly on statements by patients is not scientifically satisfactory. When such authorities as Kraus and Rosenheim conclude that "globus" is primarily a condition of disordered sensation, they are forced to rely in part on the patients' descriptions, and their conclusions, lacking further tests, remain open to doubt. We wish to learn whether the feeling is due to the walls of the esophagus meeting in slight spasm and thus pressing on each other, as would a foreign body if actually present. It seems not a good test to pass a sound or a tube, for slight spasm may conceivably be overlooked or overcome in this way. Rather it has seemed best in the present study to rely on the roentgen ray, a thick barium paste¹ being used.

Esophageal spasm, according to Vorkastner, was noted as early as 1740 by Hofman, and 1833 by Modiere. Hamburger speaks of globus, in 1871, as "stenosis spastica migrans intermittens."

In 1895, Rosenheim argued that globus is primarily a condition of disordered sensation. Spasm is not a necessary characteristic, but might follow hyperesthesia. He failed to find spasm in many cases with the esophagoscope, noting nothing but a little occasional paleness or hyperemia. Kraus warmly sided with Rosenheim in 1902, maintaining that in many nonhysterical cases of globus, he had never been able to make certain of

* Read before the Section on Nervous and Mental Diseases at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

* Owing to lack of space this article is abbreviated here by the omission of an illustration. The complete article appears in the Transactions of the Section and in the author's reprints.

¹ The graphic method with a balloon in the esophagus as used by Carlson is also valuable and a kindred study of this type will soon be published.

spasm, for the patients were able to swallow without difficulty, and sounds could be passed. A further reason, according to Kraus, for believing in the independence of globus and spasm, is that pharyngeal spasm may occur separately as well as in conjunction with globus. In 1905, Max Buch also agreed that globus is not spasm, since difficulty in swallowing is not the essential mark of the former. He argued further that "cramps" of a hollow viscus never call forth a feeling as of a foreign body. He reported twenty-two cases, most of them with hyperesthesia of sympathetic origin.

In current literature, globus is often referred to as spasm or as possible spasm. Osler and McCrae say that "some consider globus to be spasm in the lowest degree." Brooks² notes the connection between esophageal spasms and psychic conditions, observing that undoubtedly the most frequent basis of esophageal spasm is some disturbance of the emotional balance.³

In the examples to be presented: 1. No difficulty in swallowing was observed or complained of. 2. Moderate spasm of various portions of the esophagus was present with the experience of "globus." 3. A fairly thick barium paste might in part remain thickly held in the esophagus for more than from ten to twenty-five minutes after swallowing.⁴ 4. At another time, when no symptoms were complained of, the paste passed through without undue delay.⁵ 5. Spasm of other portions of the gastrointestinal tract might accompany that of the esophagus.

REPORT OF CASES

CASE 1—S. L., a married woman, aged 34, was evidently of neurotic disposition when first examined, in December, 1922. Her chief complaint for more than a year had been a fear of fatal heart disease, along with palpitation, and spells of difficulty in drawing breath followed by chills and transient diarrhea. She also had extreme fear of being at home alone. At the opera she sometimes became so excited that she had to leave. Physical examination proved generally negative, apart from an occasionally discharging left ear and occasional slight albuminuria. The heart was normal, the blood pressure was 120 systolic, 98 diastolic.

² Brooks, Harlow, in Tice's Practice of Medicine.
³ Vorkastne, W. in Lewandowsky's Handbuch der Neurologie, 5, 1914.
⁴ Kraus, F. in Nothnagel's Spezielle Pathologie und Therapie, 2, 120, 1902. Reference lists are given by these two writers.
⁵ Rosenheim, T. Ueber die Neurosen des Oesophagus. Allg. med. Centralztg. 64, 1173, 1895.
⁶ Buch, Max. Globusgefühl und Aura Arch. f. Psych. u. Nervenkrankh. 40, 704, 1905.
⁷ Baryon (Examen radiologique de l'oesophage). Lyon med. 131, 187, 200 [March 10, 1922] also notes dysphagia as a symptom of spasm.

⁴ It is important to distinguish between the barium persisting as a thick mass in the esophagus and merely as a thin coating adhering to the walls. The latter is not to be taken as evidence of spasm.

⁵ The barium sulphate was made into a paste with malted milk, chocolate and a little water. Such a paste passes through the normal esophagus more slowly than a fluid mixture of barium. Therefore to avoid error the diagnosis of spasm must not be made from the films alone but must be confirmed with prolonged fluoroscopy.

Oct. 20, 1923, she reported that coryza had made her particularly nervous and fearful during the week. For the last two days, she said, she almost continually had a lump in her throat. It was "like a stiff tube." Recently, she had called a similar experience a "ball in the throat." There was no difficulty in swallowing.

At 1:40 p. m., the patient swallowed two teaspoonfuls of barium paste as described, and the same amount ten minutes later. At 1:53, the film shown in Figure 1 was taken. There was apparent spasm of the entire esophagus, with persistent delay in emptying until about 2:18 p. m. The esophagus was normal in outline. The passage of the opaque material was most markedly delayed at the point of exit, where the diameter seemed distinctly narrowed. The barium entered the stomach very slowly. The stomach outline seemed normal. Pylorospasm was present. A small, normal bulb appeared after fifteen minutes.

CASE 2—K. B., a married woman, aged 38, was seen in private consultation, in 1917, when the general physical examination was negative, except for visceroptosis under the roentgen ray. She complained excessively in a typically neurasthenic manner. In 1918, at Michael Reese dispensary, she complained of 'pains all over,' headache, dizziness, nausea and gnawing epigastric pains after eating, belching, leukorrhea and irregular menstruation. On one occasion, she mentioned a feeling as of food 'sticking' after eating. Many of her symptoms disappeared after four months' rest, but she stated that she was too nervous to attend to her children. In February, 1919, she passed out of my care for a time, going to the hospital where a diagnosis of visceroptosis and neurasthenia was made. In April, 1919, she returned complaining of a cold. There were localized rales and dulness with positive roentgen-ray findings of tuberculosis and she was sent to a sanatorium for a period. There was a little edema of the extremities. She seemed to recover from the tuberculosis, had gained almost 50 pounds (23 kg.) by February, 1920 and felt fairly



Fig. 2 (Case 2)—Spasm of esophagus in globus hystericus confirmed under the fluoroscope.

well. After a year or two of relative comfort she again appeared with various complaints, such as pruns in the hands, feet and knees, spells of faintness and weakness, insomnia, pain in the anal region, and headache at the vertex. The systolic and diastolic blood pressure at various times was 174/112, 138/94, 206/140. The Wassermann test was negative and the blood counts were normal.

May 17, 1923, she complained of a "choking sensation" in the throat, and, on fluoroscopy, the esophagus appeared spastic. The following week the film was taken as shown in Figure 2. June 7, the feeling in the throat had largely disappeared, and, on fluoroscopy, there was almost normal physiology. No marked delay appeared at the cardia. On examination in June, 1924, when no throat symptoms were complained of, the opaque material passed through the esophagus in a normal manner.

CASE 3—A married woman, aged 40, had had occasional epileptic attacks since the age of 31. Her complaints in 1923 led to a diagnosis of esophageal spasm, after roentgen-ray examination. The case is reported here only to illustrate that in mild esophageal spasm no difficulty in swallowing may be complained of.

COMMENT

If we examine the positive side of the evidence that globus is essentially hyperesthesia, it does not seem convincing. In my own studies, there was no conspicuous evidence of such hyperesthesia. However, even if the esophagus is hypersensitive, as Rosenheim observes, and even if the sympathetic system is particularly sensitive, as Buch seeks to prove, the question would still be left open whether this would explain the origin of globus, for the sensory theory of globus clearly denies the presence of spasm, and therefore is open to refutation by means of the roentgen ray, as we have seen. On the other hand the motor conception of globus need not deny a possible associated element of hyperesthesia. Indeed, it might seem reasonable to expect a spastic muscle *ipso facto* to be hypersensitive. In experiments soon to be reported, it has been found that sensitivity may vary with changes of striated muscle tonus. This is a further question that need not be discussed here. In any event, without denying a parasthetic element, we may assume that globus is essentially a spastic phenomenon. The walls of the esophagus, meeting in spasm, feel somewhat like a bolus of food and suggest to the patient the experience of a foreign body. Since my studies have been few, further observations by other workers are desirable.*

310 South Michigan Avenue

ABSTRACT OF DISCUSSION

DR DAVID S. BOOTH, St. Louis: Does the location of the spasm of the esophagus have any bearing on the globus in the throat?

DR JOSEPHINE A. JACKSON, Pasadena, Calif.: Dr. Jacobson refers to an underlying pathologic physiology in this condition, so I do not know whether or not I shall be out of order in bringing up the etiologic basis of it. I wonder whether any one might get the impression from Dr. Jacobson's paper that pathologic physiology means dismissing or doing away with the psychology in these cases. Kempf, in his work on the automatic nervous system, makes us understand how promptly any idea produces a physiologic change. Now, the name of the condition, globus hystericus, was, of course, given by the ancient Greeks with the idea that the uterus itself had traveled up into the throat, because the globus, as the author demonstrates, is a spasm, which, of course, makes a thickening. Therefore, it means an actual lump that is distinctly felt. There are other tubal structures which have a similar spasm as the colon or the rectum itself. This might cause us to think, since very promptly the idea is translated into a physical condition, that always there would be a physical parallelism with psychic activity.

DR EDMUND JACOBSON, Chicago: Patients with globus do not always describe it classically as a "ball" or "lump in the throat." Several writers describe a variety of sensations, for example, a feeling passing up under the sternum or one referred to the epigastrium. In my experience any portion of the esophagus or cardia may be involved in the spasm. No correlation has been made between the locality and the location of the sensation. To be decisive on this point would require a larger number of observations. The relation of emotions to globus is a separate problem. Writers sometimes discuss emotions, but fail to distinguish between speculation and experiment. Graphic methods illustrate the experimental approach to the subject.

* The innervation of the esophagus is discussed by Carlson and his associates in a recent article. They conclude that there are efferent motor and inhibitory fibers in both the vagi and the splanchnic nerves leading to the cardia and lower end of the esophagus. Carlson, A. J., Boyd, T. E., and Pearey, J. F. Studies on Visceral Sensory Nervous System Reflex Control of Cardia and Lower Esophagus in Mammals. Arch. Int. Med. 30: 409 (Oct.) 1922.

SOME SPECIAL FEATURES OF MASSACHUSETTS' PROGRAM FOR VENEREAL DISEASE CONTROL*

EUGENE R. KELLEY, M.D.,

Commissioner, Massachusetts Department of Public Health
AND

ALBERT PFEIFFER, M.R.C.S., L.R.C.P.

Chief, Subdivision of Venereal Diseases, Massachusetts Department
of Public Health

BOSTON

In recent years, venereal disease control programs have been presented and discussed from various angles at all kinds of medical meetings.

After the high tide of enthusiasm in this direction, engendered by the abnormal conditions of the war time period, most health administrators expected that there would be a recession of financial and popular interest in this newly inaugurated work of health departments. This has occurred, also many tentative schemes enthusiastically advocated during the hectic war time period, particularly in the direction of popular education and forcible repression, have failed to meet the acid test of consistent support by general public sentiment. Appropriations have in many instances fallen off sharply, and in some instances practically disappeared. It has been demonstrated that it is not at present possible to get the public to receive educational, epidemiologic or isolation policies for syphilis or gonorrhea on the same plane and in the same spirit that it will, for instance, for tuberculosis or diphtheria.

It has been, we believe, adequately demonstrated that however we may look on this subject purely from its communicability and public health aspects, the public is unable to consider the public health aspect as something entirely apart from the problems of private and public morals equally associated with the venereal question. On the other hand, experience has shown that there are definite niches for the public health departments, for the clinicians, the social service forces, the law enforcement agencies, the educators, and the guardians of public morals in a sane program for the control of venereal disease.

The great problem now is that of interpreting the proper sphere of each of these groups, and working out a program of efficient articulation and correlation of these various spheres of action and responsibility.

Perhaps the most pressing duty in this field now resting on the health administrator is that of endeavoring to determine just what lines of activity are clearly his own peculiar responsibility, and to perfect the technique of procedure in these before concerning himself too greatly with the activities peculiarly belonging to some of the other groups previously enumerated, although at all times maintaining a sympathetic cooperation and stimulative policy in respect to the repressive, clinical and moral phases of the problem.

Before proceeding to the discussion of the main topics of this paper, I shall give a brief explanation of the organization, personnel and general policies of the subdivision of venereal diseases of the Massachusetts Department of Public Health.

* Owing to lack of space this article is abbreviated by the omission of two charts. The complete article appears in the Transactions of the Section and in the author's reprints.

* Read before the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June 1924.

ORGANIZATION, PERSONNEL AND GENERAL POLICIES

The subdivision of venereal diseases was created in 1918 as a part of the general division of communicable diseases. The staff of the subdivision numbers eight: one physician, who serves as chief of the subdivision, one attorney for special work with the courts, one special investigator (male), two social workers (female), one stenographer, and two clerks.

Gonorrhea and syphilis were made reportable in Massachusetts in February, 1918. Reports are made by number direct to the state department of public health and not by name, contrary to the procedure used in reporting cases of the other communicable diseases dangerous to the public health. Reports are required of patients only in the active or infectious stage of the disease, which explains a certain discrepancy between the total reported cases and the number of specimens submitted for the Wassermann test. In line with the procedure in many other states, physicians are required to report to this department by name patients who have allowed treatment to lapse. These cases are then reported to the local board of health having jurisdiction, and, if requested by the local board of health, the assistance of the division staff is available for locating such cases and restoring them to treatment and supervision. If patients refuse treatment, they may then be quarantined by the local board of health, but this procedure has almost never been found to be necessary. As to policies, the Massachusetts department of public health has consistently attempted to cover ground in venereal disease work where there could be little or no question of its being within its own proper sphere and its methods. The methods for the control of venereal disease are not markedly different from those of many other state venereal disease divisions, except that there has never been any effort made to develop expert clinicians within the department for diagnostic or curative service, and the educational work of the subdivision has always been carried out as part of the general educational work of the department as a whole.

There are some features of the Massachusetts program which are strictly within the proper provision of a state health department's activities and yet which may not be generally known or widely followed in other states. We are presenting illustrations of these special activities, which fall roughly into the following classes: curative, repressive, law enforcement, and, generally speaking, educational, with the hope that our experience may be of value to other departments of health. They are:

1. The manufacture and distribution of arsphenamin and analogous products.
2. Work among the pharmacists in reference to nostrums.
3. Cooperation with the courts.

ARSPHENAMIN AND SULPHARSPHENAMIN

A resolution authorizing the state department of health to provide for the prevention and suppression of syphilis, passed by the legislature of Massachusetts, April 11, 1916, reads as follows:

Resolved That there be allowed and paid out of the treasury of the commonwealth a sum not exceeding ten thou-

sand dollars, to be expended under the direction of the state department of health in purchasing dioxydiamino-arsenobenzol and its derivatives, or other substances of equal or greater value in the prevention of the transmission of syphilis, or in making investigations as to the practicability of manufacturing, or in manufacturing, the same for free distribution to boards of health, hospitals, dispensaries and physicians for use within the commonwealth in the suppression of syphilis in such manner and subject to such rules and regulations as the state department of health shall prescribe.

Because of the disturbed conditions due to the war and the blockade enforced on German products, it was soon determined that the only practical line of procedure was to reproduce as closely as practicable the technique of the manufacture of arsphenamin. Preliminary chemical experiments soon demonstrated that the directions given in the description of process as filed in the United States Patent Office were absolutely worthless. Hence the problem was one of reproducing, or rather of producing, an analogous product as a result of the department's own experiments. The method now in use at the state arsphenamin laboratory for the manufacture of both arsphenamin and sulpharsphenamin is given in Figures 1 and 2.

Considerable difficulty was experienced before an arsphenamin was obtained that came up to the necessary requirements. This was finally accomplished in the laboratory of the food and drug division of our department during 1917, and in 1918 was produced in sufficient quantities to supply the state approved clinics. During 1919, the manufacture of arsphenamin was established on a quantity basis for free distribution to hospitals, clinics and physicians throughout the state, the only stipulation being that no charge should be made to patients for the drug. This, of course, in no way prevented the physician from charging a fee for his professional services in private cases.

The usual centers of distribution are the so-called "state approved" venereal disease clinics. Physicians desiring the product must satisfy the chief of the clinic that they understand the technique of preparation and administration of the drug.

A word of explanation in reference to these clinics is perhaps necessary. There are, in all, eighteen such clinics, so located geographically that facilities for diagnosis and treatment are readily available to any one in need of these. The staff of the subdivision is in constant touch with the work of these clinics, and a regular system of quarterly conferences is carried out, by which the chiefs and sometimes the assistant chiefs of all the clinics meet for presentation of papers, discussion of cases, and the holding of illustrative clinics in the larger hospital centers of the state. These conferences are very well attended, and appear to be of real value to the staffs of the various clinics.

These clinics receive from the state subsidies of from \$500 to \$1,000 annually, with such supplies of free arsphenamin as they may require, but, in order to be eligible for this assistance, the clinic must conform to the clinic standards adopted by the department of public health. By these means, the department has a guiding hand in the conduct and activities of these clinics.

Figure 3 shows the distribution of arsphenamin by years:

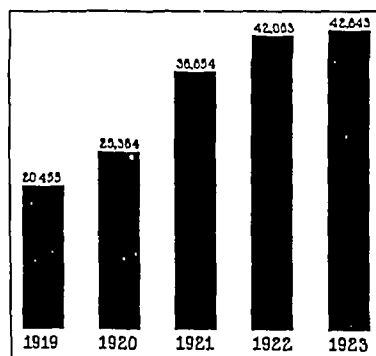


Fig. 3—Arsphenamin distributions 1919-1923, based on dosage of 0.6 gm.

Since Ehlich introduced arsphenamin in 1910, the need has been felt for a product similar in nature but more adaptable for use by the general practitioner, especially in treating cases of children, obese subjects and those who have had long courses of treatment, in whom suitable veins are often difficult to find.

The State Department of Public Health of Massachusetts has never manufactured the "neo" product, mainly on account of its chemical instability, but when

Others have had reactions of a nitritoid type, dermatitis, etc., and one death, this was due to shock in a patient with heart disease shortly after the administration of the drug after the fifth treatment had been begun.

The relative demand for arsphenamin and sulpharsphenamin is shown in Figure 4, although up to the present no special effort has been made to "push" sulpharsphenamin with the general practitioner.

PROPRIETARY AND QUACK REMEDIES

The fact that special legislation is not always necessary to carry out health measures is forcefully shown by the campaign conducted by the department against proprietary and quack remedies sold by druggists for the self-treatment of venereal diseases. It was thought advisable to have a special investigator of the department visit each druggist in the state, explaining to him in detail the department's program in venereal disease control. The prevalence, dangers of home treatment, and complications of venereal disease were outlined, and the necessity of thorough and scientific treatment emphasized. The druggist was then asked to cooperate with the department by refusing to carry in his drug store any nostrums for the treatment of venereal diseases. The pharmacists almost to a man were found to be interested and highly cooperative, and in most cases were unaware of the activities that were being conducted toward venereal disease control. As a general thing, these men had not given thought to the consequences of badly treated cases, or realized that they were instrumental in deceiving the unfortunate victim, leading him to think that his misfortune was slight, and easily and speedily cured by the taking of some highly advertised concoction.

A recital of the complications and dangers of gonorrhea, the difficulty of absolutely curing these cases, the uncertainty of anything less than the most scientific

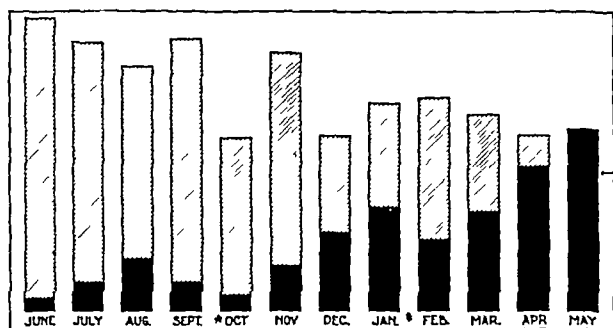


Fig 4—Relative monthly distribution of arsphenamin and sulpharsphenamin from June 1, 1923 to June 1 1924 shaded areas arsphenamin black sulpharsphenamin star lack of product to meet demand, arrow arsphenamin height

sulpharsphenamin was first produced, and was favorably commented on by the United States Public Health Service, our arsphenamin laboratory staff produced a batch, and, after extensive pharmacologic tests, made both by Dr. Reid Hunt of Harvard Medical School and at the Hygienic Laboratory at Washington, this product was distributed to the state approved venereal disease clinics for trial.

The comparative safety of sulpharsphenamin, even over neo-arsphenamin, its ready solubility, the degree of concentration of solution which can be used without the element of danger of overneutralizing or underneutralizing with caustic soda, and its high therapeutic and penetrating power have made this preparation a favorite. It has been more economical to manufacture, mainly because of the fact that the toxic batches of arsphenamin occasionally available in the laboratory can be converted into safe sulpharsphenamin. We began manufacturing sulpharsphenamin in June, 1923, and have as yet distributed the product mainly to our clinics and physicians who have particularly requested it, but we are now satisfied that it has a definite place in the treatment of syphilis, and are prepared to manufacture it for free distribution to all physicians. To May 30, 1924, 12,187 doses of sulpharsphenamin, 0.6 gm., have been distributed.

There is considerable difference of opinion regarding the irritating properties of sulpharsphenamin when injected subcutaneously or intramuscularly, results from some clinicians after several hundred doses have shown that only a slight burning has been complained of at the point of administration, which has not been intense and has been of a quite temporary character. Others have reported painful induration at the seat of injection, which has lasted for twenty-four hours. Apparently the least unpleasantness is exhibited when a concentrated solution, for instance, 0.3 gm. of sulpharsphenamin, dissolved in 0.9 c.c. of distilled water or sterile physiologic sodium chlorid solution, is given hypodermically in the loose connective tissue. Higher doses, up to 0.9 gm., have been given repeatedly by several clinicians without any unpleasant reactions.



Fig 5—Exhibit containing fifty different preparations for self treatment of gonorrhea voluntarily contributed by druggists

treatment, the complications of syphilis, and the cost to the state for the upkeep of patients with tabes and general paralysis was given. Almost invariably, a search was made of the shelves, and a collection of the products made and either emptied into the sink or packed up for return to the wholesaler or manufacturer, or our representative was asked to take them away and destroy them. Only a few of those visited failed to respond, giving as an excuse that they would cooperate if all others would do the same. On a return visit, these invariably fell into line, and we can now report

full cooperation from the 1,400 druggists so far seen. A list of the state approved clinics, where patients can receive free treatment if they are unable to pay a physician, is always left with the druggist so that he may refer persons who may inquire about facilities for treatment.

The wholesale drug houses were visited, and usually the general manager or vice president who was seen asked for a list of these preparations so as to discontinue stocking them. The difficulty was to give a complete list, as almost daily new ones were discovered. Figures 5 illustrates some of the most common of the nostrums.

COOPERATIVE WORK WITH THE COURTS

In its program for the control and suppression of venereal disease, Massachusetts has never been in favor of drastic legislation, and our health department has not approved placing on our statute books acts which were not endorsed by public opinion.

The following statute covers the physical examination of prisoners.

The warden of the state prison, the superintendents of the Massachusetts reformatory, the reformatory for women, the prison camp and hospital and the state farm, and the keepers and masters of jails and houses of correction shall cause a thorough physical examination to be made by a competent physician of each inmate in their respective institutions committed for a term of thirty days' imprisonment or more. In conducting the examination, special attention shall be given to determining the presence of communicable disease, particularly gonorrhea, syphilis and pulmonary tuberculosis.

There is nothing in this act which covers the examination and, if necessary, treatment of sex offenders not given a jail sentence while in the hands of the court. Therefore, in 1918, with the object of reaching such offenders, a letter was sent to the justices and special justices of the Boston Juvenile Court, and the police, district and municipal courts in Massachusetts, which read, in part, as follows:

You are perhaps familiar with the action taken by the Massachusetts State Department of Health, whereby, dating from Feb. 1, 1918, gonorrhea and syphilis were declared to be dangerous to the public health and were made reportable by physicians to this Department.

In close cooperation with the War and Navy departments and with the federal Public Health Service we have inaugurated a vigorous campaign against these menaces to national efficiency.

In the execution of your official duties, you are almost daily placed in a position in which you may render a great service to this campaign. This is especially true in cases put on probation by your court. Prisoners in a penal institution suffering from syphilis in an infectious stage may be held there under treatment until they are no longer a danger to the public health, even though this may detain them beyond the time of expiration of their sentence. In cases on probation, however, because of the comparative freedom allowed the probationer, both in his movements and in his choice of medical attendant, effective treatment may or may not be persisted in for the desired period.

From a health officer's standpoint, to place on probation a person suffering from a venereal disease in an infectious stage, without requiring that person to take prompt, regular, effective treatment, or to place a person charged with an offense against chastity on probation without first ascertaining whether or not that person is capable of communicating a venereal disease is a failure properly to protect the public health.

For these reasons we suggest that you instruct your probation officers that as soon as the state approved clinic in their vicinity is established, each case in their charge, proved

to be suffering from gonorrhea or syphilis in an infectious stage, should be placed under treatment in that clinic and at the same time that the medical disposition of the case be reported to us.

In order to get the fullest result this procedure should, if this is possible, apply also to cases held waiting commitment, who now, although perhaps a danger to the health of other prisoners, are able temporarily to escape compulsory examination and treatment.

We also suggest that you make it the rule of your court that as many offenders as possible, at least all persons arrested for offenses against chastity, shall submit to a physical examination by a competent physician before the final disposition of the case, also, that you suggest to the court official having in charge a case suffering from a venereal disease, presumably reported to this department according to statute, that he give to the person in authority over the prisoner a copy of the laboratory findings in the case and a statement that it has been reported to this department under such and such a serial number. This statement, when received by the physician later undertaking the treatment of the case, will prevent duplication in reports to us, and will save unnecessary repetitions in diagnostic tests.

By some such measures as these the courts of this Commonwealth can be of great assistance in our efforts to control this widespread physical evil, this national menace, efforts urgent in time of peace, imperative in time of war.

In the fall of 1919, a representative of the department was given the task of visiting each of the courts of the state to discuss the policy of the department in the control and suppression of venereal diseases, the prevalence and importance of venereal diseases, the location of the established clinics for free treatment, and to ascertain whether, with our present legislation, the court officials could properly make an effective disposition of all sex offenders and those coming before their courts accused of offenses against chastity.

We have in the state eighty-eight courts, fourteen superior courts (one for each county), and seventy-four lower courts, made up of fifty-two district courts, thirteen police courts, eight municipal courts and one juvenile court. Besides the juvenile court, which is situated in Boston, juvenile sessions are held in all other courts outside Boston.

The survey was highly satisfactory. Most of the courts in the state responded favorably, some making the suggested plan as outlined above a strong and active part of their court action.

It was considered desirable to continue having a field worker engaged mainly in this line of work, as considerable effort was necessary in revisiting courts where the probation officers and judges require assistance in properly disposing of their cases. Many court officials were enthusiastic, stating that the program gave them a new and much needed approach to many who are brought into the court, and offered a better solution of many problems which had hitherto been difficult to handle.

The department's special investigator gives considerable time to the probation officer, who has the unique position of being interpreter, counselor and intermediary, the friend of the defendant, the heart of the court. In the satisfactory disposition of cases, much depends on his vision, tact and persuasive powers. In addition to the judges and 157 probation officers, the policewomen in many cities are proving a strong ally to the courts.

The policy of some courts is to have the case continued so that the defendant can be examined, the probation officer having the custody. Some judges have taken the stand that a refusal of medical examina-

tion is sign of guilt, and therefore do not hesitate to impose a sentence of thirty days in the house of correction, thus insuring a thorough physical examination. Some judges have had to be won over from such opinions as the following: That punishment was necessary, and that the thirty dollar fine for fornication was necessary, rather than the more happy and effective disposition of the case under probation with proper treatment.

Some courts have attending physicians, others request physicians, often from established venereal disease clinics, to advise them or to examine defendants.

The local boards of health assume responsibility for the expense of examination, or the expense is paid from the probation officers' funds, but no court is left with this difficulty unsolved.

Results from the revisiting of about a dozen or more courts showed that, out of 1,500 sex offenders who had been examined, 605 were found to have venereal disease. In one comparatively small court, 121 defendants were examined during the year. There is an opportunity for really effective work when a girl of 13 having gonorrhea and being five months' pregnant comes under the care of a woman probation officer properly enlightened on public health matters. In another case, the marriage plans of a mentally deficient 17-year old girl, having both gonorrhea and syphilis, were interrupted by committing her to an institution for treatment.

Enthusiastic cooperation can be secured only by keeping in touch with the various courts through literature and by frequent interviews. Tact, judgment and patience are essential qualifications for one engaged in this work, and, in the work with the courts particularly, a legal training is a valuable asset.

A large proportion of the public still fails to appreciate that the spirit and purpose of the court is to be sympathetic and helpful. Public opinion must be educated and enlightened to keep pace with the officers of the court and public health officials. We feel that, with our present methods, we are accomplishing our purpose in the field of venereal disease control, and that drastic legislation is not at present required or desirable.

ABSTRACT OF DISCUSSION

DR C C PIERCE, Chicago. I was very much interested in Dr Kelley's presentation of three phases of the Massachusetts program for venereal disease. There are many other phases of this work going on in Massachusetts, as there are in other states. I wish to express my views in regard to one statement made by Dr Kelley. He referred to the delimitation of the field of the health department in this particular work and the field of the social agencies, of law enforcement, church, educators, the clinicians and others who actually have a very important and responsible part to carry out. The health department should realize not only that these other groups have a part to play in the venereal disease program, but that the health department should define the field of each of these groups, show them why they should engage in this work, and help them to formulate plans as to how they should participate. In that way the health department will be the center around which these cooperating agencies can work, the program will be articulated definitely with the work being done by the health department, there will be some intelligent supervision on the part of the people who should know what should be accomplished by the activities of these various agencies. Therefore I feel that there is a very important part for the health department to assume in the guidance, direction, and the formulation of plans for all the various cooperating agencies. The manufacture and distribution of arsphenamin accomplishes really more than

providing efficient and tested remedies for the treatment of syphilis. It is somewhat comparable to the state health department distributing antitoxin for diphtheria, it places venereal diseases on the same plane as other communicable diseases, which the department attempts to control, and therefore has an educational value. The importance of controlling prisoners and others apprehended for commission of crime and suffering from venereal diseases is very important, as such persons form the most dangerous class of spreaders of venereal disease that we have. Persons of sufficient mentality to keep out of the clutches of the law, or with protective instincts developed sufficiently to avoid arrest, are not nearly as dangerous to the community as those who have venereal disease and are apprehended for some crime. The Massachusetts Department of Health is on the right track in soliciting the cooperation of the courts of the state in keeping prisoners with venereal disease under treatment until they are no longer a menace to the community. It would be a crime against public health to release a known criminal after a short jail sentence if he still had a communicable disease in an infectious stage. The health department has a good argument to present when it asks druggists not to sell to the general public "patent" proprietary medicines exploited for the cure of venereal diseases. Improper treatment of persons with gonorrhea or syphilis does not cure the patient, and results in his being an actual menace to those with whom he comes in contact because he believes he has been benefited or cured by taking the advertised remedy. Those who have had experience in venereal disease control know that nostrum treatment of venereal infections is worse than useless.

DR H G IRVINE, Minneapolis. Perhaps the most important problem we have to face today in connection with venereal disease is the problem of appropriation, and what is best to do with the money that is available from the standpoint of the final effect on the treatment and control of these diseases. I think that without doubt nearly all the states are facing this problem of reduced appropriations. All should have started out during the war with this in mind and with a definite plan of decentralization so that the cost of work would be taken over by local communities and the work still go on in face of withdrawal of federal aid. What are the most prominent problems? I believe, first of all, administration. We must have allotment for that. Second, operating a laboratory for the Wassermann test and smears. The examination of smears should be discouraged as fast as we can educate the members of the medical profession to do their own work. A man who has not a microscope and is not capable of making an examination for the gonococcus really should not treat these cases. We feel that practically every man who sends a smear to the laboratory is more or less incompetent so far as the treatment of that disease is concerned. There should be stimulation to get the men to do that work themselves. They should be educated to become competent. The state laboratory offers an excellent opportunity to secure the cooperation of the medical profession, and that is one of the crying needs of any public health work, particularly when the case originates with the physician. If the profession does not cooperate voluntarily, it is going to be almost impossible to succeed in the control of these diseases. I think that one of the best ways to get that is to furnish this service to the physicians. It has been interesting in our laboratory, which started during the war, to watch the increase in the number of cases investigated. We have come up to as high as 50,000 tests this year. This shows that the medical profession is on the lookout for these diseases. The next item of importance is that of social service. It is absolutely necessary to have some agency to assist in the control of these patients, and I believe that is a part of the bureau of venereal diseases that should certainly be kept up. I should like to say a word about arsenicals, in comparing sulpharsphenamin and arsphenamin. I notice that Dr Kelley uses arsphenamin and that the state does not produce neo-arsphenamin, which is most popular because of the ease of administration. I believe that manufacturers sell two to one of neo-arsphenamin, and if the state of Massachusetts made that I think comparison between that and sulpharsphenamin would be rather different. There is one thing to bear in

mind, and that is that in spite of the fact that sulpharsphenamin has been pretty well tested so far as danger is concerned, we still do not know its final therapeutic evaluation, and this will not be known for some time. It is not possible to decide the final value of a product simply from disappearance of a positive Wassermann reaction or a lesion. The thing we must bear in mind is the final cure of syphilis, if that is possible, and it takes a good many years to estimate the value of a product so far as final cure is concerned. I look with some hesitancy on a product until we know this. Syphilologists say that sulpharsphenamin has two points of value: first, its use intramuscularly is of great value in the treatment of infants in whom it is hard to get into a vein; second, it possibly has a more specific effect on syphilis of the nervous system and will be of great value there. Drs. Kelley and Pfeiffer did not tell us how much it costs to manufacture their product, and I think it is important to take into consideration now that the product can be purchased so cheap. I should like to know what it costs them.

DR. EUGENE R. KELLEY, Boston. I cannot tell precisely what arsphenamin costs us. Sulpharsphenamin is a by-product. It does not add a cent to our overhead. The principal reason we did not use neo-arsphenamin was simply that we felt there was a certain amount of instability to that product. The points brought out by Dr. Irvine are well taken. There is a practical point about sulpharsphenamin—we can take rejected batches of arsphenamin and change them over to sulpharsphenamin at very small cost, thus salvaging a prospective loss. Hitherto we have been rather collaborating with some other laboratories and clinics and trying out sulpharsphenamin as an experimental proposition, but we are now producing it as a routine product. In Massachusetts we have an appropriation of approximately \$20,000 a year for the manufacture of arsphenamin and like products. The amount produced last year was 42,000 standard doses. This figures out about 30 cents a dose. Originally this product was manufactured in the laboratory of our food and drug division in the state house and we thus avoided overhead costs, but the superintendent of buildings objected to the fire risk because of the presence of the large amount of ether necessary in the process and we had to rent a small building. In reply to the inquiry regarding our budget, we have between \$70,000 and \$80,000 for venereal disease control.

Clinical Notes, Suggestions, and New Instruments

WORM IN THE EAR DRUM

KOPLAND KARL MARKOFF M.D. NORWICH CONN.

A man, aged 34, came into my office, July 31, with a handkerchief held over his left ear. The handkerchief was stained with blood, which was coming from the ear. The patient gave a history of bleeding from the ear since the previous Saturday, and complained of a hissing sound in his ear. He also stated that he had had a discharge of pus from his ear on and off for seven years. He saw his physician about his present condition the day before, who irrigated the ear, but as the bleeding continued as well as the hissing, he was referred to me.

The external canal was filled with fresh as well as coagulated blood. When the canal was wiped out, the classical pearly white water fall was seen coming from the lower half of the ear drum. At first glance this looked like pus, a swab after touching it, came out perfectly dry, but still the glistening pearly white, so-called water fall continued. On close examination this white object proved to be a worm such as is found in apples, and as it moved, trying to enter the rupture in the drum, the segments of its body moving back and forth gave the impression of a purulent discharge from the middle ear. About two thirds of the worm was already in the middle ear. The worm was extracted with forceps and proved to be 25 mm long, with a diameter of about 2 mm.

Special Article

DIPHTHERIA MORTALITY IN THE LARGE CITIES OF THE UNITED STATES

Comparative studies of diphtheria mortality in various localities have appeared at fairly frequent intervals ever since the introduction of the diphtheria antitoxin treatment in 1894-1895. A number of observers have drawn attention to the marked differences both in the actual diphtheria mortality in different localities and in the trend of the mortality rate. Cobbett¹ pointed out, more than twenty-five years ago, that diphtheria diminution in London was at that time by no means keeping pace with the marked decline observed in continental cities, and Jordan,² at about the same time, showed that marked variations in diphtheria death rates could be observed in American cities in the years following the introduction of the antitoxin treatment. More recently, a careful statistical study of diphtheria in "twenty representative American cities" by Crum³ has shown the same irregularities, some cities in 1914 recording a diph-

Geographic Divisions

1 <i>New England States</i>	5 <i>East South Central States</i>
Maine	Kentucky
New Hampshire	Tennessee
Vermont	Alabama
Massachusetts	Mississippi
Rhode Island	6 <i>West North Central States</i>
Connecticut	Minnesota
2 <i>Middle Atlantic States</i>	North Dakota
New York	South Dakota
New Jersey	Iowa
Pennsylvania	Nebraska
3 <i>South Atlantic States</i>	Missouri
Delaware	Kansas
Maryland	7 <i>West South Central States</i>
District of Columbia	Arkansas
Virginia	Oklahoma
West Virginia	Louisiana
North Carolina	Texas
South Carolina	8 <i>Mountain and Pacific States</i>
Georgia	Montana
Florida	Wyoming
4 <i>East North Central States</i>	Idaho
Ohio	Colorado
Indiana	Utah
Illinois	Nevada
Michigan	New Mexico
Wisconsin	Arizona
	Washington
	Oregon
	California

theria rate only one fifth as high as in 1900, some showing little change, while two cities had higher diphtheria rates in 1914 than in 1900. A committee of the Chicago Institute of Medicine in 1919 emphasized the existence of similar divergences.⁴

With the aim of bringing the diphtheria situation in American cities to general attention and in the hope that methods found available for reducing diphtheria in one locality may be made familiar and be utilized in others, THE JOURNAL has undertaken an annual general survey of diphtheria mortality in American cities of more than 100,000 inhabitants, similar to the typhoid surveys published for several years past.

The sixty-eight cities here included are those having a population of more than 100,000 at the time of the U. S. Census of 1920 (fourteenth census). It has seemed useful to group them according to the recognized geographic divisions. Within each group, the

1 Cobbett, *Lancet* 2: 1457 (Dec. 3) 1898.

2 Jordan, *Philadelphia M. J.*, Feb. 18 1899.

3 Crum, *Am. J. Pub. Health* 7: 445 1917.

4 *Proc. Inst. Med. Chicago* 2: 231 1918 1919.

cities are arranged in order corresponding to the average rates for the four years 1920-1923.

The diphtheria death rates have been calculated on the basis of the population estimates of the U S Bureau of the Census, where these are available. The rate of population growth of certain cities since 1920 has been

TABLE 1—Average Death Rates of Cities in New England States from Diphtheria (Including Croup) per Hundred Thousand Population

	1920-23	1915-19	1910-14	1905-09	1900-04	1895-99	1890-94
New Haven	8.5	14.2	14.9	22.7	15.6	54.8	74.5
Cambridge	0.4	12.9	23.8	25.3	40.7	71.9	58.0
Hartford	13.0	13.8	25.3	28.1	38.8	47.8	120.9
Worcester	13.6	14.1	21.3	32.2	16.5	50.3	47.8
Springfield	15.4	24.9	19.1	81.3	29.6	51.3	68.2
Providence	16.2	29.3	26.8	30.7	41.2	53.5	55.3
New Bedford	18.3	17.0	20.9	22.6	25.1	53.6	20.0
Lowell	18.7	23.5	20.6	31.0	69.3	44.3	36.4
Boston	19.6	26.8	20.0	26.2	53.7	83.9	112.2
Bridgeport	20.1	23.4	28.3	26.6	34.2	63.9	79.3
Fall River	28.1	23.6	24.0	34.4	60.1	43.8	46.0

somewhat problematic, and the census bureau makes no estimates for the population of Detroit, Los Angeles, Seattle, Denver, Akron, Bridgeport, Houston and Spokane. For these eight cities we have employed the arithmetical method of estimation, recognizing fully that this method may involve a considerable degree of error for the years 1921-1923. The numbers of deaths for diphtheria used in calculating death rates have been in most instances those sent us by the local health authorities. In some instances, designated in the tables, we have used figures obtained from other sources. For three cities (Camden, N. J., Kansas City, Kan., and Kansas City, Mo.) local figures were not available for certain years, and death rates from the reports of the U S Census Bureau have been used.

In examining the tables and comments that follow, it should not be forgotten that diphtheria is primarily a

TABLE 2—Average Death Rates of Cities in Middle Atlantic States from Diphtheria (Including Croup) per Hundred Thousand Population

	1920-23	1915-19	1910-14	1905-09	1900-04	1895-99	1890-94
Trenton	7.0	8.8	12.3	15.8	23.6	92.7*	89.7*
Newark	10.0	14.6	23.3	80.1	46.7	79.1	92.2*
Albany	12.7	10.4	20.0	31.6	26.9		
Scranton	14.0	22.1	23.4		77.8*	48.6*	
New York	14.5	21.8	28.0	40.0	58.0	85.8	134.4
Philadelphia	17.3	22.7	24.6	34.1	50.0	100.6	119.4
Yonkers	18.1	17.7	25.3				
Paterson	18.2	13.5	16.1	25.5	62.9	111.8	145.4
Rochester	20.0	12.7	22.1	32.4	32.3	45.9	96.6
Jersey City	20.0	21.0	22.2	32.6	67.0	80.4	108.6
Camden	20.6	23.2	38.8	48.9	62.6	100.3*	194.0*
Pittsburgh	21.4	22.3	29.3	20.4	36.9	32.9	86.4
Reading	23.0	16.9	35.7	29.2	70.1	72.0	94.1
Syracuse	26.4	12.9	16.6	17.4	17.7	31.1	55.4
Buffalo	27.8	27.3	22.0	18.4	24.8	53.3	60.9

* Diphtheria deaths from Chapin's Municipal Sanitation

children's disease, and that the age constitution of the population is therefore a factor in determining the crude rates used in this summary. It is not believed, however, that the general conclusions drawn from such figures would be seriously affected by the results of a more detailed analysis, although the rates of certain individual cities would doubtless be modified.

The cities in the New England states (Table 1) have, for the most part, rather high diphtheria rates, the highest rate in any American city being registered in a city in this group (Fall River⁵). Hartford is the only one of the eleven New England cities to show a continuous decline in diphtheria for each quinquennium since 1890,

although Cambridge and Bridgeport have records substantially as good. Two cities (Fall River and New Bedford) have higher diphtheria death rates for the four years 1920-1923 than for the preceding quinquennium.

The cities of the Middle Atlantic states (Table 2) have also for the most part relatively high diphtheria rates, seven of the fifteen cities having average rates of 20.0 or over for the four years 1920-1923, and only one (Trenton) an average rate below 10.0. New York City makes a remarkable showing in this group, maintaining a continuous decline throughout the thirty-year period, the percentage decline in the last four years being especially notable. Jersey City and Newark also show a steady diminution in each quinquennium for this period. Philadelphia, in which diphtheria seems to have been surprisingly high in the last decade of the nineteenth century, has likewise achieved a steady improvement comparable with that of New York. For shorter periods Scranton, Trenton and Camden have maintained uniform progress in the direction of lower rates.

Some cities, however, in this group have not had so satisfactory an experience. Seven cities (Rochester,

TABLE 3—Average Death Rates of Cities in South Atlantic States from Diphtheria (Including Croup) per Hundred Thousand Population

	1920-23	1915-19	1910-14	1905-09	1900-04	1895-99	1890-94
Norfolk	5.0	4.1	6.7				
Richmond	9.2	5.8	7.0	9.8	24.4	17.6	59.7
Washington	11.4	11.9	6.9	11.2	23.5	50.9	77.9
Wilmington	11.6	15.2	18.0	27.8	50.9	84.9	83.8
Baltimore	12.3	13.5	14.2	16.1	33.0	68.1	70.0
Atlanta	14.6	10.1	12.5	14.2	11.1	10.5	8.8

Syracuse, Albany, Buffalo, Paterson, Yonkers and Reading) recorded a higher average diphtheria rate for the last four years (1920-1923) than they did in the quinquennium 1915-1919, Syracuse and Buffalo especially being considerably worse off in the proportion of diphtheria deaths than they were twenty years earlier.

The cities in the South Atlantic states (Table 3) show at the present time relatively low diphtheria death rates, although in the decade 1890-1899 both Baltimore and Washington were apparently more severely affected than Syracuse and Buffalo. Baltimore is the only city in this group to show uniform progress in the direction

TABLE 4—Average Death Rates of Cities in East North Central States from Diphtheria (Including Croup) per Hundred Thousand Population

	1920-23	1915-19	1910-14	1905-09	1900-04	1895-99	1890-94
Dayton	9.2	9.3	22.1			38.0*	116.0*
Columbus	9.6	7.6	12.1	10.5	11.6		
Akron	11.9	18.9	27.8				
Milwaukee	12.2	19.8	27.8	26.4	22.7	51.7	116.2
Cincinnati	12.3	13.2	13.9	17.0	17.3	37.3	103.7
Indianapolis	13.6	21.4	13.5	13.3	15.9	36.4*	97.3*
Cleveland	16.2	20.0	24.6	20.8	42.6	45.3	90.7
Chicago	20.0	31.2	37.9	27.0	33.9	69.7	117.3
Youngstown	20.2	11.9	40.5	33.5	28.0	17.6	
Grand Rapids	23.2	13.5	20.0	26.6	17.2	32.4	99.2
Toledo	25.5	14.1	25.4	20.4	56.8	34.6	89.3
Detroit	26.3	32.2	33.3	22.6	38.5	62.9	132.9

* Diphtheria deaths from Chapin's Municipal Sanitation
† Data for 1891-1894

of a lower diphtheria rate. The 1920-1923 diphtheria rate in Richmond was considerably higher than for either of the two preceding quinquenniums, and in Atlanta the 1920-1923 rate was the highest for the whole thirty-four year period.

Like the Middle Atlantic states, the cities of the East North Central states (Table 4) have relatively high

⁵ It is perhaps worth noting that the infant mortality rate in Fall River in 1920 was the second highest among registration cities with a population of more than 100,000 (Birth Statistics, 1920).

diphtheria rates, although there are some conditions that are difficult to understand, such as the disparity for the last decade between the rates in the two Lake cities of Milwaukee and Detroit. Cincinnati is the only city in this division to show uniform progress from quinquennium to quinquennium. Two Ohio cities (Columbus and Dayton) have had for ten years a consistently low average, but two others (Toledo and Youngstown) had much more diphtheria for 1920-1923 than in the preceding five years.

TABLE 5—Average Death Rates of Cities in East South Central States from Diphtheria (Including Croup) per Hundred Thousand Population

	1920-23	1915-19	1910-14	1905-09	1900-04	1895-99	1890-94
Birmingham	5.5	7.2	8.3				
Nashville	9.6	8.9	7.3	10.3	13.9	20.1	7.4
Memphis	9.6	11.2	11.9	13.4	6.9	10.0	8.6
Louisville	12.5	9.5	9.0			39.0	41.6

* Diphtheria deaths from Chapin's Municipal Sanitation
† Data for 1891-1894

The cities of the East South Central states (Table 5) have had relatively low rates during nearly all the period covered by our figures. Both Louisville and Nashville, however, have apparently experienced a progressive increase in diphtheria deaths since 1910.

TABLE 6—Average Death Rates of Cities in West North Central States from Diphtheria (Including Croup) per Hundred Thousand Population

	1920-23	1915-19	1910-14	1905-09	1900-04	1895-99	1890-94
Kansas City, Kan.	10.9	23.1	12.4*				
Minneapolis	12.6	19.0	23.3	24.4	44.0	34.0	53.0
Des Moines	16.0	16.6	15.1				
Kansas City, Mo.	17.0	22.8	15.7*				
St. Louis	17.7	24.4	23.7	19.4	43.3	67.9	6.7
St. Paul	16.3	20.7	31.4	31.1	27.9	43.3	73.4
Omaha	26.1	35.8	15.6	24.5	20.5	28.2	8.2

* Data for 1911-1914

The cities in the West North Central states (Table 6) have not much to boast of in their diphtheria mortality. Diphtheria in Omaha is apparently about as much of a menace now as it was at any time in the last twenty-five years. Since 1905, the diphtheria rate in Minneapolis has averaged less in each quinquennium than the rate in the neighboring city of St. Paul, the divergence in

TABLE 7—Average Death Rates of Cities in West South Central States from Diphtheria (Including Croup) per Hundred Thousand Population*

	1920-23	1915-19	1910-14	1905-09	1900-04	1895-99	1890-94
Houston	6.6	6.1	7.6	10.5			
New Orleans	6.9	11.6	19.6	30.2	11.5	17.1	61.3
Dallas	8.4	7.4	6.9	8.1	16.8	16.0	21.8
San Antonio	8.8	8.7	6.7	7.6	17.1	10.6	4.4

* Fort Worth reports that there are no records available

the years 1920-1923 being particularly marked. In St. Louis diphtheria has apparently remained at about the same level for twenty years, although during this period the rate in Philadelphia has been cut in two and in New York City reduced in still greater proportion.

The cities in the West South Central states (Table 7) have relatively low rates, but Dallas and San Antonio have apparently not made much progress in twenty years in reducing their diphtheria mortality. New Orleans, which had a very high rate from 1890 to 1894, has now one of the lowest rates in the country. Fort Worth is apparently the only city in this country with

more than 100,000 population to have no record of diphtheria deaths, certainly an oversight in sanitary bookkeeping.

The two cities in the Mountain states (Salt Lake City and Denver, Table 8) show rather astonishing fluctua-

TABLE 8—Average Death Rates of Cities in Mountain and Pacific States from Diphtheria (Including Croup) per Hundred Thousand Population

	1920-23	1915-19	1910-14	1905-09	1900-04	1895-99	1890-94
Seattle	6.3	5.5	5.2	12.5	31.6	27.2†	18.1†
Spokane	11.0	4.2	7.0	25.8		53.5†	
Tacoma	11.4	7.8					
Portland, Ore.	11.4	6.0	12.3	12.2	20.2		
Los Angeles	12.6	7.1	7.5	15.3	24.4	35.8	46.0
Salt Lake City	12.7	14.5	15.1	34.2	46.0	14.8	56.7†
Oakland	19.0	8.1	10.3	16.1	29.1		
San Francisco*	23.3	17.9	9.2	15.3	35.3	27.9†	82.9†
Denver	23.8	6.7	10.2	20.6	29.6	27.3	14.2

* Data for 1901-1904

† Diphtheria deaths from Chapin's Municipal Sanitation

‡ Data for 1892-1894

§ Data for 1916-1919

The rates for San Francisco for the years 1899-1900 inclusive were not available in the data sent by the department of health and are taken from Cruik's paper in the American Journal of Public Health 7: 415 (May) 1911.

tions in their quinquennial averages, Salt Lake City having a lower average from 1895 to 1899 than for any but one of the following five-year periods. Denver had an average diphtheria rate for 1920-1923 that was higher than any of the three preceding averages.

The cities on the Pacific Coast (Table 8) also show considerable fluctuations. There was evidently an excessive prevalence of diphtheria in the Pacific states

TABLE 9—The Ten Cities with Highest Diphtheria Death Rates for the Four-Year Period 1920-1923

	Rate
Fall River	23.1
Buffalo	21.8
Syracuse	21.4
Detroit	20.3
Omaha	20.1
Toledo	20.1
Denver	20.0
San Francisco	19.9
Grand Rapids	19.9
Reading	19.0

from 1920 to 1923, all seven cities showing higher rates than for the preceding period. In most of the Pacific Coast cities, diphtheria seems still an important problem. Seattle, however, has had consistently low rates for fifteen years.

In comparing the cities with the highest and lowest diphtheria death rates in 1920-1923 (Tables 9 and 10), it is evident that in this period the diphtheria mortality

TABLE 10—The Eleven Cities with Lowest Diphtheria Death Rates for the Four-Year Period 1920-1923

	Rate
Norfolk	5.0
Birmingham	5.8
Seattle	6.3
Houston	6.6
New Orleans	6.9
Trenton	7.0
Dallas	8.4
New Haven	8.5
San Antonio	8.8
Dayton	9.2
Richmond	9.2

was considerably lower in the cities in the Southern states. This difference is also evident throughout the period covered by our statistics, and is a reversal of the condition shown in typhoid fever, a disease that affects disproportionately the Southern cities. It is manifest that the Northern cities will have to make relatively greater effort than the Southern cities to overcome the

climatic disadvantage from which they suffer in respect to diphtheria. The steadily progressive decline in diphtheria mortality shown by a few Northern cities in the last thirty-four years is all the more noteworthy (Table 11). The remarkable record made by New York City in combating diphtheria may well serve as an object lesson to the rest of the country. It is tempting to conclude that the especially good record of several of the cities named in Table 11 is due to the example of the neighboring metropolis.

TABLE 11—*Cities Showing a Continuous Decline in Diphtheria Death Rates by Five-Year Periods, 1890-1923*

Hartford New York Philadelphia	Newark Baltimore	Cincinnati
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It is perhaps somewhat misleading to begin the tables in this summary with the year 1890 instead of at an earlier date, since all of the diphtheria reduction since 1890 might conceivably be interpreted by some to be the effect of diphtheria antitoxin treatment. It should be remembered, however, that in many localities (Philadelphia and Cincinnati, for example) diphtheria was especially high about 1890, and that the average for 1890-1894 was considerably greater than for certain previous periods. In Chicago, the quinquennial average for 1870-1874 was 83.8 (including 139.3 in 1870), as compared with 117.3 for 1890-1894. Denver had a rate of 154 in 1891, and of only 28 in 1886. Epoch-making as the discovery of diphtheria antitoxin has been, it would not be legitimate to consider the difference between the 1890-1894 and the 1920-1923 diphtheria mortality as wholly a "saving of life" due to antitoxin treatment. It is impossible, however, to withhold from diphtheria antitoxin credit for the major share in the amazing improvement in diphtheria death rates portrayed in Table 12.

TABLE 12—*Number of Cities with Diphtheria Death Rates of*

	40 and Over	20 and Over	10 and Over	Under 10
1890-1894	40	49	51	2
1895-1899	32	48	55	0
1900-1904	18	42	54	1
1905-1909	2	35	54	3
1910-1914	1	33	51	13
1915-1919	0	22	50	18
1920-1923	0	17	52	16

The tabulated quinquennial averages bring out clearly, perhaps nearly as well as if the data for individual years were used, the occurrence of more or less localized epidemics of diphtheria. It is plain, for example, that several cities on the Pacific Coast were much more severely stricken by diphtheria in 1920-1923 than in the preceding decade. Denver was also afflicted to an unusual degree during this period, the diphtheria rates in that city being about six to eight times as high in 1920 (23.2) and 1921 (14.8) as in 1915 (3.4) and 1916 (1.7). On the other hand, Springfield, Mass., had a rate of 52.9 in 1917 and 16.9 in 1921, while Chicago, which had a rate of 47.8 in 1917, had only 22.9 in 1919. In a general way, the period 1915-1919 was characterized by relatively increased rates in the New England cities, and the period 1920-1923 by higher rates in the Pacific and Mountain states. In 1915-1919, five of the eleven New England cities had a higher rate than in the preceding quinquennium, but in 1920-1923 all but

two showed a decrease, as against 1915-1919, in eight Mountain and Pacific cities, this condition was reversed only two showed an increase in 1915-1919 over the preceding quinquennium, but seven of the eight showed an increase for 1920-1923 as compared with 1915-1919. While the extreme fluctuations in diphtheria mortality observed prior to 1895 have not occurred in recent years, the existence of more or less pronounced epidemics is still apparent.

In the period since 1910, the decline in the diphtheria rate for the registration area of the United States (from 21.4 in 1910 to 17.7 in 1921) has not been nearly so great as the decline in the typhoid rate (from 23.5 in 1910 to 9.0 in 1921). The improvement in the typhoid rate has been brought about chiefly, if not wholly, by methods of preventing infection. For diphtheria we now possess a method of prevention and a means of cure, both of demonstrated effectiveness. A marked reduction in diphtheria mortality in the United States can undoubtedly be achieved in the next ten years by suitably directed organized effort.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY

ORIDINE—The calcium salt of the iodized fatty acids of cottonseed oil. It contains from 23 to 25 per cent of iodine in organic combination.

Actions and Uses—Oridine acts in the system similarly to the inorganic iodides. The iodized fatty acid radicle of oridine is not decomposed in the stomach, but a portion of the iodine is split off when it enters the intestine, the undecomposed portion is readily absorbed and, as in the case of other fats, is largely deposited in the tissues, where it is slowly split up. The action of oridine is exerted more slowly than that of the inorganic iodides (see Iodized Fats and Fatty Acids, New and Nonofficial Remedies, 1924, p. 156).

Dosage—The iodine content of oridine 1 Gm. is approximately equivalent to sodium iodide 0.28 Gm. and to potassium iodide 0.31 Gm. When used for the prophylaxis of goiter 0.01 to 0.03 Gm. per day are given until 40 doses have been taken.

Manufactured by Eli Lilly and Co., Indianapolis, Ind. No. U. S. patent. U. S. trademark applied for.

Oridine Tablets—Each contains oridine equivalent to iodine 0.01 Gm. This dosage form is used only for prophylaxis against goiter and for the treatment of simple goiter.

Oridine is a light brown powder, almost odorless and tasteless. It is almost insoluble in water, benzene ether and alcohol, slightly soluble in chloroform and carbon tetrachloride.

Mix oridine 1 Gm. with water 20 Cc. and filter the filtrate becomes but slightly opalescent on the addition of silver nitrate solution (soluble iodides).

Mix about 0.5 Gm. of oridine accurately weighed in a nickel crucible with a mixture of powdered sodium hydroxide 4 parts and potassium nitrate 1 part and heat until fusion has been completed. Cool and dissolve the fused mass in 150 Cc. of water, warming to hasten solution, filter into a 400 Cc. beaker and wash well. Add 25 Cc. of tenth normal silver nitrate (the amount of silver is 'k' in the formula below) then add slowly with stirring nitric acid until acid in reaction to litmus paper. Filter the solution through a weighed Gooch crucible, wash and titrate the excess silver nitrate in the filtrate with tenth normal potassium sulphocyanate (the amount of silver in the filtrate is 'a'). The precipitate in the Gooch crucible (consisting mainly of silver iodide with some silver chloride) is further washed with 3 portions of alcohol, then ether, dried at 100 C. and weighed ('W'). The amount of iodine can be calculated according to the formula

$$X = \frac{7527w + a - k}{293}$$

where w equals combined weight of silver iodide and silver chloride, a equals weight of silver iodide and (W\N) equals weight of silver chloride. By this method oridine contains not less than 23 per cent nor more than 25 per cent of iodine. (Chlorine is used in the manufacture of oridine so that the finished product contains from 1 to 3 per cent of combined chlorine.)

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY SEPTEMBER 20, 1924

DIPHTHERIA IN THE UNITED STATES

Readers of THE JOURNAL are familiar with the survey of mortality from typhoid fever in the United States which has been published each year, today American cities are proud of their records in controlling mortality from this disease. In this issue is published a similar survey of the mortality from diphtheria in the large cities of the United States, grouped by geographic divisions. If our facts as to the cause of diphtheria, its prevention by the use of the Schick test and toxinantitoxin, and its treatment by sufficient antitoxin given properly and early are correct—and they undoubtedly are—diphtheria is a preventable and controllable disease. It should have a low mortality wherever competent physicians are available.

There are, as will be seen from the figures published, marked differences both in the number of deaths from diphtheria in various communities and in the tendency of the mortality rate to increase or decrease. The highest diphtheria death rate in any American city is that of Fall River, which incidentally had the highest infant mortality rate among cities of its class during 1920. Only one city in New England has shown a continuous decline in diphtheria since 1890. While New York City has had a steady decline throughout thirty years, such cities as Rochester, Syracuse, Albany and Buffalo record a higher rate for the last four years than in the previous five-year period. Louisville and Nashville have experienced a progressive increase in diphtheria death rates since 1910. Omaha shows apparently no progress for twenty-five years, and Minneapolis far surpasses St. Paul in its attack on this disease. The diphtheria mortality rate is considerably lower in Southern cities, and this is believed to be definitely related to climatic advantages, since diphtheria is more likely to attack during periods of cold and rain.

The figures now made available are a challenge to every city in the United States which has a diphtheria mortality rate higher than the strikingly low rate of

New York City. That community decreased from a rate of 134.4 in 1890-1894 to 85.8, and then gradually to 58, to 40, to 28, to 21.8 and for 1920-1923, to 14.5. This must be taken as an indication that the intensive campaign in the scientific control of diphtheria waged in that city has yielded substantial and encouraging results. That these results are not wholly fortuitous is shown by the fact that a continuous decline in mortality from this disease has also been shown by Hartford, Conn., Jersey City, Philadelphia, Newark, N. J., Baltimore and Cincinnati.

The facts and the methods of control are available. It remains for the health officials and the physicians of cities which continue to have high death rates to show that similarly good results can be achieved by the intensive application of our scientific knowledge.

THE PROBLEM OF FATIGUE

Fatigue is a phenomenon experienced so frequently among men that a definition of it scarcely seems necessary. Work is succeeded by weariness in the daily life of most of us, and the mere reminder of "that tired feeling" is often sufficient to promote an interest in short cuts to recuperation. The problem of fatigue is one that concerns the employer of labor who may fail to secure a satisfactory day's output from his employee, if the activity of the latter is speeded up beyond a rate that is unduly fatiguing. The schoolmaster can make little satisfactory progress with fatigued school children, hence he must endeavor to avert conditions that demonstrably produce deterioration with respect to the ability to perform the tasks of learning. The physician rarely carries a patient through any considerable period of illness without receiving repeated reminders of what weariness as well as weakness means to the sick.

The textbooks glibly define fatigue as a more or less complete loss of muscular irritability and contractility, brought on by functional activity. Such a description could scarcely be expected to point the way to relief, for it fails to indicate the underlying causes that must be combated. The primary source of fatigue must lie in the performance involving the transformation of energy in the body, as there is no fatigue when all expenditure of effort is excluded. It is conceivable that the depletion of the stores of energy is responsible for fatigue, hence, the recuperating power of rest that permits restitution of the loss. Or, it has been proposed that fatigue results when the products of muscle metabolism accumulate during work faster than they can be removed from the contractile organs. This is the "waste product" theory of fatigue. Half a century ago, the German physiologist Ranke expressed the belief that, as a result of the chemical changes occurring in the muscle during contraction, certain substances are formed which depress or inhibit the power of contraction. In this category of products, lactic acid or lactates, carbon dioxide and acid phosphates—all known to

¹ Diphtheria Mortality in the Large Cities of the United States this issue p. 918

appear in muscles—have been included in the past. It is known, in fact, that the extent of the occurrence of some of these "fatigue substances" depends, in part at least, on the abundance of the oxygen supply to the muscles during their activity.

Far more startling was the announcement by Weichardt,¹ twenty years ago, that there are formed in fatigue not simply the usually accepted fatigue substances, but a more specific substance, a true "fatigue toxin," analogous to bacterial toxins, and that this is chiefly responsible for fatigue. Subsequently, he asserted that a comparable toxic product, *kenotoxin*, can be obtained from proteins by a diversity of chemical manipulations outside the body. The climax of the widely discussed investigations was reached in the alleged production of an *antitoxin*, *antikenotoxin*, for which a patent was issued by the U. S. Patent Office. Although there are experiments on record in which the spraying of a school room atmosphere with a 1 per cent solution of the vague "*antikenotoxin*" was stated to have greatly increased the alertness and even the scholarship of the students, the reports lack confirmation, and Weichardt's scheme has been almost entirely forgotten. Strangely enough, much of this structure of hypothesis was built on a foundation of utterly unconvincing evidence. Weichardt observed a variety of untoward symptoms when extracts of the muscles of highly fatigued animals were injected into test animals. They included reduction in temperature, slowing of respiration, sleep and untimely death. Lee and Aronovitch² of the College of Physicians and Surgeons, New York, have demonstrated that juice from the muscles of non-fatigued animals exerts the same action as fatigue juice, both on animals and on excised muscles. The experiments thus fail to confirm Weichardt's assumption of the existence of a specific toxin of fatigue. With this collapse of a fundamental claim, the entire superstructure of hypotheses is demolished. For the present, we must continue to depend on rest as the best "*antitoxin*" to fatigue.

THE FORTHCOMING UNITED STATES PHARMACOPEIA

The committee elected in May, 1920, for the revision of the United States Pharmacopeia has practically completed its work, and the proofs for the revised text are now being read by the committee members. At the annual meeting of the American Pharmaceutical Association in Buffalo, August 25 to 29, E. Fullerton Cook, chairman of the Committee on Revision, reviewed the principal features of the new book. The responsi-

bility for the scope of the new Pharmacopeia has been placed on the twenty-one physician members of the committee, so that the new edition should be more fully representative of the therapeutically valuable drugs, chemicals and pharmaceutical preparations than has been the case formerly.

The present Pharmacopeia describes 782 substances in the text, the new Pharmacopeia contemplates about 650. Of these, some are used only in manufacturing processes, while others represent different forms of the same remedy, so that the actual number of medicinal substances is much less than 650. Since about forty medicinal substances are to be added, the net change has resulted in the deletion of a considerable number of drugs that are little used or are of doubtful therapeutic value. Some of the additions are

Proposed Latin Title	Proposed English Title	Similar Market Product
Acidum acetyltannicum	Acetyltannic acid	Tannigen
Acidum acetylsalicylicum	Acetylsalicylic acid	Aspirin
Albumini tannas	Albumin tannate	Protan
Amidopyrina	Amidopyrine	Pyramdon
Argento proteinum fortius	Strong silver protein	Protargol
Argento proteinum mitius	Mild silver protein	Argyrol
Arsphenaminum	Arsphenamine	Salvarsan
Aethylis aminobenzoas	Ethyl aminobenzoate	Diarsenol
Barbitali sodium	Barbital sodium	Anesthesia
Barbitalum	Barbital	Barbital sodium
Barii sulphas	Barium sulphate	Veronal
Calcii iodobehenas	Calcium iodobehenate	Barium sulphate
Carboni tetrachloridum	Carbon tetrachloride	Sajodin
Carbromalum	Carbromal	Carbon tetra chloride
Chloramina	Chloramine	Adalin
Dextrosam	Dextrose	Chloramine T
Dichloramina	Dichloramine	Grape sugar
Epinephrina	Epinephrine	Dichloramine T
Neoarsphenaminum	Neoarsphenamine	Adrenaline
Oleum chaulmoograe	Chaulmoogra oil	Neosalvarsan
Paraffinum chlorinatum	Chlorinated paraffin	Neodiarsenol
Phenobarbitalum	Phenobarbital	Chaulmoogra oil
Phenolsulphonephthaleinum	Phenolsulphonephthalein	Chlorococaine
Procainae hydrochloridum	Procaine hydrochloride	Luminal
Quinidinae sulphas	Quinidine sulphate	Phenol red
Quinniae aethylcarbonas	Quinine ethylcarbonate	Procaine
Sodii diphosphas	Sodium diphosphate	Novocaine
Spiritus frumenti	Whisky	Quinidine sulphate
Spiritus vini vitis	Brandy	Euquinine
Thyrocinum	Thyroxin	Sodium acid phosphate

It is significant that most of the additions are products of recognized therapeutic or diagnostic usefulness. Many of the preparations are already described in *Useful Drugs*, and a still larger number are included in *New and Nonofficial Remedies*. In many cases, too, the descriptions and standards in *New and Nonofficial Remedies* have been adopted for the new Pharmacopeia without significant changes. In response to the demand by the medical profession for standardized medicines, a larger proportion of substances in this Pharmacopeia are standardized by assay or by more rigid tests for impurities than in previous editions. Biologic assays have been greatly amplified. In the present Pharmacopeia, only two drugs (pituitary solution and cannabis) are required to be assayed biologically, although optional

¹ Weichardt, *München med. Wehnschr.*, five papers, 1904-1906. *Serologische Studien auf dem Gebiete der experimentellen Therapie*. Stuttgart, 1906. *Ueber Ermüdungsstoffe*. Stuttgart, 1912. A list of Weichardt's numerous publications on the causation of fatigue down to 1912 may be found in the last paper. A shorter account of his work with a bibliography is given by Weichardt in *Kolle und Wassermann Handbuch der pathogenen Mikroorganismen*, Ed. 2, 1913, 2nd half, p. 1499. Later papers may be found in various German periodicals. ² Lee, F. S., and Aronovitch, B. On Weichardt's Supposed "Fatigue Toxin." *Am. J. Physiol.* 69: 92 (June) 1924. Lee, F. S. Additional Data Concerning Weichardt's Supposed "Fatigue Toxin." *ibid.* 69: 101 (June) 1924.

methods are given for several others. In the new book, obligatory biologic tests are given for eight drugs and their preparations. These are aconite, cannabis, digitalis, epinephrin solution, ergot, pituitary solution, squill and strophanthus. Heretofore, one of the chief difficulties in the application of bio-assays has been the use of variable standards. In the new Pharmacopeia, this has been remedied. The committee has carefully defined and fixed the standard for each substance to be biologically assayed, and the Bureau of Chemistry of the U. S. Department of Agriculture has offered to furnish manufacturers with samples of the standardized preparation to be used in adjusting the activity of new lots. The acceptance of this service is optional with pharmaceutical manufacturers, but it is believed that most of them will take advantage of the opportunity, and that, as a result, the bio-assayed drugs of the market will have a uniformity and dependability not before attained.

With many of the useless or doubtfully valuable drugs eliminated, and with the addition of a number of substances of demonstrated therapeutic merit, the new Pharmacopeia will deserve greater support from the medical profession than has been the case with previous editions of the book.

HISTIDIN AND ITS DERIVATIVES IN THE BODY

From time to time, specific physiologic roles that may be assumed by the different amino-acids that have of late acquired prominence in the biochemistry of the tissues and fluids of the body are being discovered. Most obvious is the association of cystinuria with the amino-acid protein derivative cystin when the latter fails of complete destruction in metabolism. Alkaptonuria has similarly become associated with the tyrosin complex of the albuminous substances, while the amino-acid tryptophan may become responsible for the production of indol and related compounds in the organism. When benzoic acid or its derivatives are ingested, the appearance of hippuric acid (benzoyl glycin) in the urine calls attention to the detoxicating effect of the amino-acid glycocoll. Many of the disintegration products of proteins fail to come to notice readily because they are so easily oxidized to simple end-products. The cyclic derivatives, such as those containing the benzene ring or "aromatic nucleus," offer, as a rule, greater resistance to such disruption.

The amino-acid histidin, which has a conspicuous position through its almost universal presence in combination in animal and plant proteins, and hence in protoplasm, contains a cyclic group, the so-called imidazol nucleus, in fact, it may be regarded chemically as imidazolyl alanin. Through the action of bacteria, a potent amin, histamin, may be formed, for some micro-organisms seem to have the capacity of decarboxylating histidin to histamin, and tyrosin to tyramin.

It has recently been pointed out¹ that this process, which also occasions amin production from other amino-acids, is thus a normal pathway in the catabolism of amino-acids in the intestinal tract which occurs side by side with deamination. Histamin (and probably also tyramin) is a normal component of the cecal and fecal matter of man, i. e., of the large intestine.

How such highly poisonous compounds as the proteinogenous amins could be harbored within the organism without producing symptoms of intoxication has not been easy to understand. When histamin is introduced directly into the circulation, a physiologic response is speedily evoked, yet the ingestion of the toxic amin in considerably larger amounts is not followed by untoward symptoms. When first introduced into the alimentary tract, histamin disappears very rapidly without evoking a marked pharmacologic reaction. When injected just outside the intestinal wall, on the way to the liver, a marked reaction is obtained. Koessler and Hanke,² who have investigated the problem in the department of pathology at the University of Chicago, are forced therefore to draw the inference that histamin may be rendered pharmacologically inert in its passage through the wall of the intestine. On this assumption, we are reminded, injury to the intestine might, under suitable conditions, lead to grave symptoms.

According to further studies of the Chicago biochemists,² although ingested histidin, particularly as it is furnished by the proteins of our diet, is almost entirely destroyed in metabolism, nevertheless small quantities of catabolites therefrom regularly appear in the urine, or at any rate imidazol-containing substances can be detected there. The daily output of imidazol complexes—we may call them "imidazols" for the sake of brevity—amounts to from 120 to 220 mg. The excreted imidazols are chiefly endogenous in origin. To a variable extent, however, the excretion of imidazols is dependent on the protein content of the diet. In pathologic conditions, the imidazol values seem to vary widely. Patients in a state of inanition excreted very small amounts of imidazols. Those suffering from nephritis, who showed a nitrogen retention in the blood, gave the lowest imidazol values. The excretion of imidazols was, in general, inversely proportional to the severity of the disease. According to Koessler and Hanke,² an imidazol excretion of less than 80 mg. on an adequate diet seems to indicate a definite impairment of the excretory function of the kidney. Values below 40 mg. suggest a very unfavorable state of the secreting renal tissue, in the sense of a partial loss of function through destruction. Evidently, the future may disclose various new signs of inadequate renal performance when the different components of the urine of health

1 Koessler K. K. and Hanke M. T. Studies on Proteinogenous Amines. XVI. The Intestinal Absorption and Detoxication of Histamine in the Mammalian Organism. *J. Biol. Chem.* 59: 889 (April) 1924.

2 Koessler K. K. and Hanke M. T. Studies on Proteinogenous Amines. XVI. The Excretion of Imidazoles in the Urine Under Normal and Pathological Conditions with Special Consideration of Nephritis. *J. Biol. Chem.* 59: 803 (April) 1924.

come to be better known both qualitatively and quantitatively. Even now, we are assured that the determination of the imidazols in the urine promises to yield valuable information regarding the protein catabolism in disease and regarding the excretory function of the kidney.

Current Comment

ANGINA PECTORIS

The history of the study of the cause of angina pectoris parallels that of many other disease entities in one respect, namely, a search for some morphologic change as the background for their pathology. The paroxysmal attacks of pain so characteristic of typical angina are part of a clinical syndrome that is frequently brought to the attention of almost every physician. Consequently, the procedures for relief should be well conceived on a rational scientific basis. A recent writer has well remarked that the very multiplicity of the theories that have been promulgated in regard to angina pectoris is good evidence that there is no agreement in the profession regarding its cause. The old explanation postulating a sclerosis of the coronary arteries has largely been abandoned because the postmortem findings often fail to correspond with the theoretical expectations. Some students of the subject have assumed that spasm of the coronary arteries may bring about a deficiency in the blood supply of the myocardium and thus initiate the disaster. Still others, including some of the most ardent investigators of heart problems, hold that angina pectoris is due to irritation of nervous structures in the beginning of the aorta by the plaques of an aortitis, when a rise of arterial pressure produces stretching of the investing membranes. In contrast with such hypotheses, Reid¹ urges the abandonment of this mechanistic pathology, and presents the syndrome of angina pectoris as a functional condition in the same sense as are the arrhythmias. Bearing in mind that the attacks seem to be initiated as a rule by exercise, physical or mental, Reid has sought the characteristic causes in the physiologic changes induced by such activity, rather than in some special lesion in the heart. Ordinarily, during exercise there is a dilatation of the peripheral blood vessels, produced, as Reid and others believe, in large part at least, by the cooperation of the nervous system, probably by a reflex through depressor fibers in the vagus nerve. In this way normally there is a drainage of blood away from the heart, so that this organ is able to contract without unusual strain. According to Reid, the sequence of events in angina pectoris may be the failure of this reflex dilatation of the peripheral vascular bed, resulting in a sudden rise in pressure in the first part of the aorta and the cavity of the left ventricle. The heightened pressure in turn irritates the nervous connections, which respond by pain referred to the sternal region, the arm and the shoulder. Angina

pectoris is a clinical entity, and one without morphologic features detectable after death. The essential difficulty, according to the latest hypothesis, is a failure of the protective mechanism of reflex dilatation of the peripheral blood vessels when the stress arises. It is easier to understand on this basis how the conventional therapeutic measures, such as the administration of nitrites or nitroglycerin, afford relief, for they bring about a prompt vasodilatation at the periphery and thus relieve the heart.

FOOD RESIDUES AND DEFECACTION

The thesis that adequate knowledge of the functions of the bowel is fundamental to proper understanding and rational treatment of constipation and the syndrome of malaise that frequently attends it requires scarcely any defense. The alimentary tract is a long tube, and in its reach of thirty feet or more, many different reactions can and do occur. How long do the food residues and other alimentary detritus remain in the gastrointestinal canal under ordinary circumstances? The oft-quoted answer to this query will probably be given as twenty-four or thirty-six hours by most persons conversant with the physiology of the bowel. They will recall that various recognizable indigestible substances that are ingested can be detected in the feces on the day following their intake, and with his more refined and exact technique, the roentgenologist has discovered that only traces of a barium meal can be discovered as a rule after the first day or two. Several investigators¹ have lately alleged, however, that the current beliefs must be somewhat modified. Alvarez and Freedlander contend for example, that the usual large amount of barium given with a small test meal acts like agar agar or liquid petrolatum and speeds up the progress of material through the bowel. Using small glass beads as indicators of the transport of alimentary residues they have found that the rate of progress varies widely in normal healthy persons. Under the conditions of their tests on man at the University of California, scarcely more than half of the ingested beads were passed by the end of the second day. Sometimes days or weeks elapsed before all the beads were recovered in the stools. No symptoms of disease were found in men and women who required a week or more to pass 70 per cent of the beads. Furthermore, the California clinicians believe that fast rates, that is, an evacuation of 85 per cent of the beads in twenty-four hours, are associated with the passage of soft, badly digested stools. The ordinary place of stasis is the colon. Consequently, when the latter is well emptied by defecation or a purge, no bowel movement should be expected or demanded soon after. A certain amount of distention seems to be essential for colonic contractions. Alvarez and Freedlander regard it as questionable, therefore, whether purgatives or laxatives that produce copious movements should ever be given oftener than two or three times a week.

¹ Reid W. D. The Mechanism of Angina Pectoris. Arch Int Med 34: 137 (Aug.) 1924.

¹ Burnett F. L. Boston M. & S. J. 1911: 171 (April 11), 115 (April 21) 1921. Am J Roentgenol 10: 599 (Aug.) 1913. Alvarez W. C. and Freedlander R. L. The Rate of Progress of Food Residues Through the Bowel. J. A. M. A. 83: 576 (Aug. 23) 1924.

Association News

THE ATLANTIC CITY SESSION

Time and Place of the Seventy-Sixth Annual Session

The Seventy-Sixth Annual Session of the American Medical Association will be held in Atlantic City, May 25-29, 1925, the Board of Trustees having decided finally on these dates at a meeting held in Chicago, September 12-13.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Plague-Infected Squirrels—Two plague-infected squirrels were reported under date of August 8 in San Benito County. They were shot, July 19, about 12 miles west of Hollister.

Complaint Against Second Chiropractic Board—Joseph A. Sanford, president of the Western College of Chiropractic, submitted to the attorney general, San Francisco, August 30, a complaint against the state board of chiropractic examiners. It is reported, alleging that members of the new board appointed by the governor, June 11, were unfit on account of the law requiring chiropractors to have practiced in California for three years before the act creating the board became effective. Sanford claims it is reported that there are ninety men in California legally qualified for membership on the board but that none of them has been selected by the governor.

Hospital News—The San Francisco supervisors appropriated \$10,000 for preliminary work on a new tuberculosis preventorium which will be built by the city of San Francisco west of Redwood City. A new four-story hospital with a capacity of thirty-one private rooms and wards was recently opened at La Jolla. Plans have been drawn for a 325-bed hospital in Los Angeles to be known as the Isabelle J. Norris Memorial Hospital, in addition to 325 general beds there will be fifty maternity rooms. Construction work on the first unit costing \$900,000 of the \$2,000,000 hospital building for the California Lutheran Hospital, Los Angeles, will start soon. Ground has been broken for a new Covina Hospital at Glendora, opposite the city park. It will cost about \$25,000. Dr. Robert T. Williams, Monrovia, will construct a new \$25,000 sanatorium.

COLORADO

Society News—At the meeting of the Arkansas Valley Medical Association at Hortense Hot Springs, August 2, Dr. Harold T. Low, Pueblo, was elected president for the ensuing year. Dr. Thomas A. Stoddard, Pueblo, vice president, and Dr. Tom R. Knowles, Colorado Springs, secretary. The mid-winter meeting will be held in Colorado Springs.

The Truth About Glands—Under the auspices of the Denver Medical Society a series of free lectures was given in the Moray Junior High School, Denver, September 1, on "The Truth About Glands." The speakers were Dr. Tracy R. Love, secretary of the state board of health, Dr. Constantine F. Kemper, and Dr. William M. Spitzer, Denver. George A. Collins, superintendent of the new hospital of the University of Colorado, was chairman, and Dr. George W. Stiles, Jr., of the U. S. Bureau of Animal Industry, was in charge of exhibits.

DISTRICT OF COLUMBIA

Causes of Absences in Schools—Through the courtesy of the superintendent of schools, Washington, D. C., a committee of the District of Columbia Public School Association, of which Dr. Louise Taylor-Jones was chairman, made a study of the causes of absences in fifteen public schools. The grade chosen for study was the 3-A grade which changed midway to 3-B, in which children are of the age when they first come under the compulsory school law. Absences from all causes were recorded from September 17, 1923 to June 18, 1924 for about 490 pupils. More than 70 per cent of all absences

were due to medical problems, and respiratory disturbances of various natures accounted for nearly 40 per cent. More than one-fourth of all absences were due to "the common cold."

ILLINOIS

Personal—William D. Wrightson, Baltimore, formerly junior assistant sanitary engineer, U. S. Public Health Service, has been appointed health officer of the Quincy public health district.

Physician Indicted—It is reported, Dr. William H. Zorger and Mrs. Charles Miller, both of Champaign, who were jointly indicted by the federal grand jury recently for conspiracy to violate the Harrison Narcotic Law, were arrested, September 5, on a bench warrant. Dr. Zorger who was also indicted separately for violation of the Harrison Narcotic Law was released under \$4,000 bonds.

Baby Conferences—More than 1,650 babies from fifty-one counties are scheduled to attend the State Fair Well Baby Conference this fall. This surpasses the registration of any previous year by nearly 500. Each baby will be given a careful physical examination by physicians of the state health department and the most perfect specimens will receive awards. The state fair conference is but one of many conducted in the state since January and about 10,000 children have been examined.

Typhoid at Litchfield—The outbreak of fourteen cases of typhoid fever recently at Litchfield occurred among persons who bought milk from a dairy two employees of which were typhoid carriers. Most of the victims bought milk from two local restaurants through which practically all milk produced by the dairy was sold. The state department of public health remarks that vaccination is a preventive for typhoid fever may cost from \$5 to \$10, but a case of typhoid fever costs usually from \$200 to \$300 and six or seven weeks in bed. Attention is drawn to the hazard of the raw milk business. Two years ago in Kewanee a dairyman who sold raw milk was put out of business when twenty-five of his customers came down with typhoid fever under conditions almost identical to those in Litchfield. More than thirty cities in Illinois, in the last two years, have adopted a model milk ordinance which practically requires pasteurization, and a number of other cities had previously adopted similar ordinances. The pasteurization of milk is therefore gaining in popularity among people in general and dairymen of the state.

CHICAGO

Annual Dinner—The annual dinner reception and dance of the Chicago Medical Society will be held Wednesday evening, October 15, in the grand ballroom of the LaSalle Hotel. Tickets are \$3 per person. The name of the speaker for the evening will be announced later.

INDIANA

Public Meeting at Indianapolis Session—At the public meeting of the Indiana State Medical Association at Cadle Tabernacle, Thursday evening, September 25, addresses will be given by Drs. W. A. Pusey, President of the American Medical Association, William J. Mayo, Rochester, Minn., and Hugh T. Patrick, Chicago.

Hospital News—A sixty-bed addition to St. Paul's Hospital, Michigan City, will be completed about May 1, 1925. Dr. Fred G. McMillen, Gary, will construct a new \$50,000 hospital building at 2188 Massachusetts Street, which will accommodate twenty-five patients. The new addition to Goshen Hospital, Goshen, will be opened about October 1.

State Conference—At the Indiana State Congress of Charities and Correction in Newcastle, October 4-7, the theme will be "Mental Health and Social Welfare." In a comprehensive survey of eleven Indiana counties it was found that 22 per cent of the population were mental defectives and that 90 per cent of the cases admitted to the Hospital for the Insane were preventable. C. O. Holmes of Gary is president of the conference and J. A. Brown of the board of state charities, secretary.

Venereal Disease Clinics—Marion County has appropriated \$1,500 to the county health office for the equipment of a cooperative venereal disease clinic in the city of Indianapolis for the remainder of this year. This is part of a plan to establish a downtown clinic to be operated jointly by the state county and city health departments for the treatment of venereal diseases only. The director of the clinic at

Richmond recently resigned and a movement is under way to relocate that clinic in the downtown section of Richmond.

Chiropractic Trickery—The bureau of publicity of the Indiana State Medical Association released to newspapers an article on hay-fever, a copy of which was published by the Fort Wayne *Daily News-Sentinel*, Fort Wayne, on the first page August 16. Credit was not only given to the Indiana State Medical Association for the article, but various paragraphs were put in quotations. To the surprise of the editors and managers of the *News-Sentinel*, as well as of physicians, the last paragraph had been altered by a compositor, a chiropractic sympathizer, in the *News-Sentinel* office, so that it read "Antitoxin and chiropractic adjustments are the latest remedies offered for the relief of hay fever sufferers." The manager and editor of the *News-Sentinel* have offered sincere apology.

Report of Publicity Bureau—The actual work of the bureau of publicity of the Indiana State Medical Association began Jan. 1, 1924. The report to the house of delegates at the Indianapolis session covers therefore, eight months ending August 31. An advisory committee to the bureau consisting of the president of the Indiana State Medical Association, the chairman of the council and the editor of the state medical journal, was appointed by the council. It decided to give to the public facts about scientific medicine, and items of about 800 words have been prepared for the newspapers, and one released each week. The news service is now used by 115 newspapers and ten periodicals the combined circulation of which is more than 660,000. These articles are carefully prepared with the assistance of a trained newspaper man, and they are censored by members of the bureau and at least one authority on the subject in hand. Twenty-seven releases have been published. Publicity meetings have also been held whenever the county medical societies desired them. There have been fourteen meetings, with a total attendance of 2,330. It has been found that the success of publicity meetings depends largely on the interest of the local medical society and the amount of publicity given them. The bureau has engaged in other activities, but the committee is convinced that its most important work is to instruct the public in the fundamentals of medical science and education.

IOWA

Personal—Dr. Edward C. Meggers, Prairie du Chien, Wis., has been appointed manager of the Clark Hospital at McGregor to succeed Dr. Henry H. Clark, who founded the hospital twenty-two years ago and now is retiring.

Physician Arrested—Dr. Ada Fuller, Des Moines, was arrested, September 11, and placed in jail on a warrant charging her with the murder of Mrs. Bertha Munger of Waterloo, who died, September 7, as the result of an illegal operation, it is reported. Dr. Fuller had registered at a hotel in Waterloo under the name of Mrs. Ray Smith, which, according to her, is her rightful name, resumed after divorce from Fuller.

Circulating Medical Library—According to the *Des Moines Register*, Iowa has the only state circulating medical library in the United States. It is three years old and still growing. In the first five months of this year there were 1,063 books loaned out of town (815 in the same period the preceding year) to 716 physicians or about 20 per cent of the physicians in the state. In addition to loaning books to physicians for the cost of postage, the library furnishes bibliographies and literature.

KENTUCKY

Five Chiropractors Fined—W. W. Harris, F. A. Huber, F. M. Roth, W. E. Green and J. H. Durham, chiropractors of Louisville, were each fined \$50, September 1, for practicing without a license. They were arrested on warrants sworn to by the registrar of the state board of health.

Hospital News—Plans are being made for the erection of a new \$1,000,000 home for the Waverly Hills Sanitarium Valley Station.—J. Ernest Shouse, who has been assistant superintendent of the City Hospital, Louisville, for about six years and acting superintendent for the last three months has been appointed superintendent of the hospital by the board of safety, effective September 1.

LOUISIANA

Physicians Employed for Maternity Work—Following the recent action of the legislature in accepting the provisions of the federal infancy and maternity act, Dr. Katherine Havard and Dr. Dorothy Edwards, New Orleans, have been formally engaged for this work.

MASSACHUSETTS

Diphtheria Deaths—The bulletin of the health department of Boston, August, states that there have been 116 deaths from diphtheria in that city this year and that not one of the victims had been protected by toxin-antitoxin immunization, further, that nearly 5,000 cases of diphtheria have been reported to the health department since December, 1922, and that not one of the patients had been immunized.

Milk Control in Boston—The milk regulations of Boston were amended, March 7, by the addition of Article 12, which requires the milk to be from herds which have been accredited by the federal government or herds which have been tested and are on the way to be accredited. The bacterial standard was reduced to 100,000 bacteria per cubic centimeter instead of 500,000. A survey of dealers who sold raw milk was made, December, 1923, and among thirty-one licensed dealers, three were selling certified and the herds of four others had been accredited. By March 15, six dealers had ordered pasteurizing outfits. By June 1, pasteurizing outfits were installed in four plants, seventeen herds had been tested, and three dealers who were installing outfits, were held up by the inability of dairy supply houses to ship all equipment. By July 15, all herds had been tested and all outfits installed and in operation. Two hundred and six cows passed the test and 217 reactors were found, a percentage of reactors of 51.3 per cent for the first test. Boston's milk supply is now 96.72 per cent pasteurized.

MICHIGAN

Infantile Paralysis in Detroit—It is reported that ten new cases of infantile paralysis were reported September 3, making a total since August 1 of 122, of which twelve were fatal.

"D.P." Arrested for Forgery—James Austen Newman, whom the Detroit Telephone Directory lists as a "D.P." and who it is reported, was a psychotherapist with offices in the Book Building, Detroit, was arrested, August 30, in San Marcos, Texas, and held pending the determination of the validity of a draft for \$75 on a Detroit bank. Newman is wanted, it is said, for passing two worthless \$200 checks in Detroit and for passing a \$200 worthless check in St. Louis. He claims to have been retained as an alienist to examine a woman in San Marcos, Texas, who is under indictment for killing three stepchildren.

Unreasonable Taxation—The *Journal of the Michigan State Medical Society*, September, notes that the last legislature passed an "enactment, rider, joker or whatever you may please to call it" that requires incorporated organizations, not incorporated for profit, to make a triannual report to the secretary of state. For the privilege of making this report the editor states, the organization pays a fee of \$10 and a filing fee of \$2. It is incumbent on county medical societies, among such other organizations as camera clubs, debating societies and literary societies which may be incorporated, to make this return and pay these fees.

MINNESOTA

State Medical Meeting—The annual meeting of the Minnesota State Medical Association will be held at St. Cloud, October 8-10, under the presidency of Dr. Archibald MacLaren, St. Paul. Those desiring to reserve hotel accommodations should communicate with Dr. James H. Beaty of St. Cloud at an early date. The council will meet at 10 a. m. and the house of delegates at 2 p. m. October 8. The banquet this year will be omitted, Thursday evening being a "purely social affair."

MISSOURI

Hospital News—The Methodist Hospital, Springfield, is having plans drawn for an addition that will cost \$125,000.—The Frisco Railroad Hospital at Springfield is being torn down to make room for a new \$400,000 hospital building which will accommodate 100 patients.

Personal—Dr. Frederick C. Narr, formerly of Pittsburgh, has become the director of the pathologic laboratories of the Research Hospital at Kansas City.—Dr. Watson Campbell, Kansas City, has resigned as pathologist of the General Hospital to accept a similar position at Dr. Arthur E. Hertzler's Hospital in Halstead, Kan.

Fifteenth Annual Dinner—Dr. Charles R. Woodson, St. Joseph, entertained members of the Buchanan County Medical Society at the annual dinner at the Woodson Sanitarium,

September 3 The guests of honor were Dr William A Clark and Dr Edward J Goodwin, president and secretary, respectively, of the Missouri Medical Association

MONTANA

Thyroid Enlargement in Montana—A study of the prevalence of thyroid enlargement among school children in Montana during the school year 1922-1923 has been reported by Dr Fred T Foard, acting assistant surgeon, U S Public Health Service (*Public Health Reports*, September 12) Sections of counties in the Rocky Mountains and up to more than 100 miles east of them were selected in order to compare the prevalence of goiter in mountainous and nonmountainous districts The study comprised the examination of 13,937 children The data collected represent a minimum rather than a maximum prevalence of thyroid enlargement for it includes only definitely enlarged thyroids There were found 3,011 simple goiters, which is an incidence of 21.6 per cent The children were of all ages from 6 to 20 years, and in 4,690 of them carefully classified by sex the goiter incidence among girls was 32 per cent, among boys, 13.4 per cent, a ratio of 2.4 to 1 Children living in rural districts of Cascade County where water from wells or springs is used had a greater incidence of thyroid enlargement than children living in cities and towns of Cascade County where public water supplies were derived from surface streams and imported vegetables purchased The general rule in all counties in which the survey was conducted, with the exception of the city of Lewiston, was that enlarged thyroids were decidedly more prevalent in the isolated rural districts than in the towns and cities The general rule in Cascade County was that the thyroid enlargement among children of the rural schools varied with the degree of isolation of the school district It appears that simple goiter among Montana school children is so prevalent that it should be considered a public health problem

NEBRASKA

Physician Sentenced—According to the *Nebraska State Medical Journal*, September, Dr John W Parsons, a resident of Omaha for forty five years, has been sentenced to the penitentiary for one year for violation of the Harrison Narcotic Law, and Dr Frederick A Edwards, Omaha, to the penitentiary for five years on a charge of performing an illegal operation Dr Edwards has made an appeal

NEW JERSEY

Hospital News—The board of directors of the Beth Israel Hospital Newark, have announced that an audit of the recent campaign for the new building of the hospital shows that \$1845,607.20 was raised, or \$345,607 more than the amount expected, and that although the campaign closed in June, a \$5,000 contribution was recently received from New York —Plans have been completed for a group of buildings at the New Jersey State Hospital, Morris Plains

NEW MEXICO

Human Anthrax—Dr R F Parks, health officer of Eddy County has reported three cases of anthrax in human beings The infection is said to have been acquired from jack rabbits

NEW YORK

Personal—Dr William B D Van Auken, health officer of Watervliet for the last four years, has resigned and Dr Charles A Birmingham has been appointed to succeed him —Dr Jeanneney of Bordeaux, France, expects to arrive in this country early in September to study our methods of dealing with the cancer problem

Book Revised—A new revised edition of the "Baby Book" has just been published by the New York State Department of Health A copy of the book is mailed to the mother of each baby whose birth is registered Copies of the book will be sent to all nurses doing public health work in the state, to health officers, midwives and registrars, and on request to any physician or mother

Site for Veterans' Hospital—Surrogate George A Wingate, Brooklyn, has been appointed chairman of a committee of three by the Veterans Bureau in Washington to select a site for the neuropsychiatric hospital to be built in the district comprising New York, Connecticut and New Jersey The other members of the committee are Dr Thomas W Salmon and Dr Henry A Cotton The committee will report to Director Hines, who will make the final selection of the site

Syracuse to Have Orthopedic Clinic—Under the direction of the Milbank Foundation, an orthopedic clinic will be opened in the city of Syracuse to treat children who have been crippled by infantile paralysis At a conference, August 26, of the city health commissioner with representatives of the state department of health, the original idea of establishing a clinic under the direction of the state was found impracticable, as there were no funds to finance the clinic It was then decided that the Milbank Foundation, which is conducting a health demonstration at Syracuse for a period of five years, should establish the orthopedic clinic (*THE JOURNAL*, August 23, p 620)

NORTH CAROLINA

Clinics for Crippled Children—In a census recently taken by the State Board of Charities and Public Welfare, about 600 crippled children were found in the state To date, eight clinics for crippled children, at which more than 400 children have been examined, have been held, the last at Fayetteville, September 4, under the direction of Dr O L Miller, superintendent of the State Orthopedic Hospital More than half of these 400 children have already applied for admission to this hospital

Reward for Eye Specialist—According to an advertisement in the *Burnsville Eagle*, warrants have been issued in Watonga and Yancey counties and a reward offered for the arrest of a traveling eye specialist who claimed to be "Dr J W Walker of Charlotte" Walker came through these counties recently, charging from \$20 to \$100 for the cheapest kind of glasses and promising to send from his hospital in Charlotte medicine which would perform almost miraculous cures According to the notice, he has neither a state license nor is he registered in the county He has a decided foreign accent, weighs about 200 pounds, is 70 inches tall, and has dark hair and eyes and a moustache

Health Department Adopts Purely Preventive Program—Beginning September 1, the department of health of Winston-Salem will devote all its energies and activities to a purely preventive program, leaving off curative treatment of any kind whatever The general dispensary, which has built up a large clientele for diagnosis and treatment has therefore been transferred to the City Hospital and will be handled by the outpatient department of that institution The venereal disease clinic has been transferred to the City Memorial Hospital Dr Ward C Curtis, city physician, will have his headquarters at the City Hospital instead of the department of health, and Dr R R Jones, who recently joined the department of health, will devote all his time to health work in the schools and to communicable disease control

NORTH DAKOTA

State Medical Election—At the thirty-seventh annual meeting of the North Dakota Medical Association, Bismarck, September 10-11 the following officers were elected: president, Dr William C Fawcett, Starkweather; president-elect, Dr John H Rindlaub, Fargo; vice presidents, Drs N Oliver Ramstad, Bismarck, and Thomas Mulligan, Grand Forks; secretary, Dr Alexander J McCannel, Minot; treasurer, Dr William W Wood, Jamestown

OHIO

Warrants for Ten Chiropractors—It is reported that state authorities issued warrants, September 2, for ten chiropractors who were notified to appear in the municipal court of Akron to explain why they were advertising the practice of chiropractic in violation of the state law

Bronze Tablet to Dr Ransohoff—At the entrance of the Jewish Hospital of Cincinnati, a bronze tablet has been placed, which reads:

"Joseph Ransohoff, MD, FACS, LL.D. 1853-1921. Surgeon and teacher. Compassion and understanding were his and a deep love for all humanity. In the wards of this hospital where he gave of himself so unsparringly the spirit of his service will live."

State Board Inspector Reports—Frank Dorsey, inspector for the state medical board, caused the arrest of 174 persons in the year ending July 1 for violations of the health laws of the state, and convictions were obtained in all but thirty of these cases Of the thirty cases, there were no trials in three, five persons left the state, eight trials were still pending, and thirteen were dismissed for various reasons The fines imposed totaled \$15,900, a part or all of the fine was suspended in some cases

Accidents in Industry—There were 933 fatal accidents in industry in Ohio for the year closing July 1, 1924, according

to the annual report of the chief of the division of workmen's compensation. This was an increase of 130 fatal accidents over the previous year. The total number of accidents in industry was 181,610, which was also an increase of 4,150. The premiums collected during the year amounted to \$10,724,780.94, and the expenditure for compensation, medical services, etc., was \$10,669,831.91.

Home Care of the Sick—Owing to a scarcity of physicians in rural communities of Brown County and the high cost of competent nurses, women from seven townships have started a 'Home Care of the Sick' project. Certain women from each community will be instructed in the care of the sick, and they subsequently will teach other women in their own communities. The work will be under the supervision of a 'health specialist' through the County Extension Agent. At the organization meeting Georgetown, September 16, meetings were scheduled for the remainder of the year for October 28, November 11, November 25 and December 9.

OKLAHOMA

Personal—Dr. Dock Long, Duncan, has been appointed county health physician by the state health commissioner—Dr. George W. Colvert, Miami, has been appointed city physician to succeed Dr. J. B. Lightfoot—Dr. William F. Lunsford, Poteau, has been appointed full time county health officer for LeFlore County under the Rockefeller Foundation plan and has been spending a month at Andalusia, Ala., to observe the health unit there.

PENNSYLVANIA

Hospital News—Mercy Hospital, Pittsburgh, will celebrate the third anniversary of Mercy Day, September 24. Dr. Charles Mayo, Rochester, Minn., will be the guest of honor and will speak on problems of the thyroid gland and gall-bladder. Dr. James I. Johnston will give a biographical sketch of the late Dr. Irwin Justus Moyer, and a dinner will be held at the University Club in the evening—A fifty-eight bed addition will be erected to the St. Joseph's Hospital at Reading—A new 300-bed hospital will be erected at Conemaugh Memorial Hospital, Johnstown—The board of managers of the Memorial Hospital of Philadelphia, Roxborough, have requested Dr. Sigismund S. Goldwater, New York, to collaborate with the superintendent of the hospital in a survey and report of the immediate needs of the hospital in its future growth with particular reference to the erection of a maternity department.

State Medical Meeting—At the annual meeting of the Medical Society of the State of Pennsylvania at Reading, October 6-9, 1924, Dr. William Allen Pusey, Chicago, president of the American Medical Association, will give an address following the presidential address by Dr. John Norman Henry. Dr. Pusey will also read a paper before the medical section on 'The Present Situation in the Treatment of Syphilis,' and will address the secretaries of the component county societies at a dinner in the evening. Among other guests at the general sessions of this meeting will be Dr. John O. Polak, Brooklyn, and Dr. William Engelbach, St. Louis, at the medical section, Dr. Thomas B. Fletcher, Baltimore, Dr. Philip S. Hench, Rochester, Minn., and Abraham Zingher, New York, at the surgical section, Dr. John F. Erdman, New York City, and Robert E. Farr, Minneapolis, at the pediatric section, Dr. Charles H. Smith, New York, Dr. John A. Foote, Washington, D. C., and at the eye, ear, nose and throat section, Dr. Ben Witt Key, New York. The Berks County Medical Society, which for about ten years has owned its own home in the city of Reading, will provide entertainment. At the public meeting, Dr. Chevalier Jackson will speak on 'The Prevention of Certain Classes of Accidents in Children,' and Dr. Woods Hutchinson on 'Making Health Contagious.'

SOUTH CAROLINA

Impostor Lands in Hospital—Isaac William Nichols, who claims to be a 'root doctor,' was admitted to hospital in Sumter, August 25, with a broken arm and various contusions. It is reported that Nichols had been charging colored people for 'medicines' which he said would make their desires come true. He told Mrs. Pippin that her husband intended to destroy her, then offered to sell for \$2 'medicine' which would protect her from any harm. Requesting Nichols to wait until she went to the planing mill to get the money from her husband, Mrs. Pippin brought Mr. Pippin home. It was shortly after this that the 'root doctor' was taken to the hospital.

TENNESSEE

State Laboratory Moves—The state health commissioner, Dr. Charles B. Crittenden, has arranged to move the state laboratory which heretofore has been in three widely separated localities to the second floor of the food and drug department on Cedar Street, Nashville. Dr. William Lattner will be in charge of the laboratory.

TEXAS

Hospital News—The old Blind Institute building in the eastern part of the city of Austin is being converted into a state hospital for the senile insane. The new hospital will be ready for occupancy the latter part of October and will accommodate about 750 patients—Plans have been made to enlarge the General Hospital, Fort Sam Houston, by the addition of buildings of a permanent character, to a capacity for 600 patients. The plans include laboratory space and equipment to meet the needs of about 1,000 patients.

School for Sanitarians—The Texas Association of Sanitarians will hold its second school of instruction in Houston, November 4-7, in cooperation with the state board of health and the city health department. Sponsored by the state board of health and with the cooperation of the University of Texas and the city of Austin, this association was organized to instruct sanitary inspectors in all phases of health and sanitation so that small towns not able to employ sanitary inspectors for special work would be able to secure a man who was generally acquainted with the health program. Dr. Arthur H. Flicker, health officer of Houston, is president, and E. G. Eggert, of the state board of health, is secretary. No fee is charged for this course.

VIRGINIA

Typhoid at Clinchburg—It is reported that a typhoid epidemic exists at Clinchburg, a lumber town in Washington County with a population of about 375. There had been on August 25, forty-two cases of typhoid fever and one death. Nurses have been sent to Clinchburg under the supervision of the assistant supervisor of nurses in this state.

Personal—Dr. Bathurst B. Bagby, acting health officer of Richmond, has been appointed chief medical inspector of the department of welfare and will assume his new duties October 1. Dr. Bagby resigned as health officer of Henrico County, September 1—Dr. George B. Young, formerly of Chicago and until recently in the U. S. Public Health Service, has been elected joint health officer of the city of Charlottesville, the county and the University of Virginia, and will assume his duties, October 1.

WASHINGTON

Cooperative Store for Diabetic Patients—Following the suggestion of Dr. Elliott P. Joslin, Boston, who recently lectured in Seattle, a group of philanthropists in that city has by endowment made possible the establishment of a store to serve physicians and diabetic patients at a cost consistent with the circumstances of the patient. The store will be cooperative in policy and part or full charity will be extended where necessary. Space, without rental charge, has been given by the Virginia Mason Hospital which will also furnish clerical supervision of the business. The store, operated by a student of the University of Washington, will be open to the public about three hours each weekday. The supplies handled will be insulin, food scales, Benedict's solution, hypodermic syringes and needles, special foods such as saccharin, soy bean flour, bran, celluloflour and Indiacum, test tubes, medicine droppers, food tables, text books and quantitative pipettes. The store is open for business. No person will make any profit from sales and the price of supplies will be regulated by a sliding scale designated as full price discount, cost, part charity, full charity. Sincere appreciation is expressed in *The Bulletin* of the King County Medical Society for the benevolence of this group of Seattle citizens.

CANADA

Hospital News—Plans are now being formulated for the construction of a children's hospital at Montreal, Que., to cost \$1,500,000. The new institution is to be founded on a charter already in existence, that of the Children's Hospital of Montreal.

Public Health News—There are only forty-eight patients in the Isolation Hospital, Toronto, Ont., according to a report recently issued by the medical officer of health. This

is a record in the history of the institution, as the number of patients usually averages 100. Ten of the forty-eight cases are diphtheria cases, which is also a new low record.

GENERAL

Tuition fees at Michigan—Word from the University of Michigan Medical School, Ann Arbor, states that the list of fees furnished for publication in the Educational Number was erroneous and should have been given as follows: The fees for residents of Michigan are \$180 per year for men and \$175 per year for women, plus a matriculation fee of \$25 for nonresidents an additional charge of \$80 per year is made.

Annual Meeting of Negro Physicians—At the nineteenth annual convention of the National Medical Association, at Newport News, Va., recently, the following officers were elected for the coming year: president, Dr. Michael O. Dumas, Washington, D. C.; president-elect, Dr. Walter G. Alexander, Orange, N. J.; secretary, H. Walker, New York; treasurer, Dr. J. R. Levy, Florence, S. C. This was the first time in fifteen years that the annual convention was held in the South. The next annual convention will be held in Chicago.

Cancer Handbooks—The basis of the educational work of the American Society for the Control of Cancer is two handbooks written by committees of experts. The medical handbook, recently rewritten, is an authoritative, condensed treatise on cancer and through the cooperation of the commissioner of health of Massachusetts and the director of the New England branch of the American Society for the Control of Cancer it will be distributed to every licensed physician in Massachusetts. The popular handbook of the society, also recently revised, is "What Everyone Should Know About Cancer."

Registration Areas—There are three states listed as having unsatisfactory mortality registration laws based on the "county system" that are not in the United States death registration area. They are South Dakota, Nevada and Arizona. Efforts are being made to have every state in the vital statistics registration area before 1930. Seven states are classed as having laws "under trial," since the laws have not been in force long enough to bring registration up to 90 per cent. These states are New Mexico, Texas, Oklahoma, Arkansas, Alabama, West Virginia and North Dakota. There are three states classified as "unsatisfactory" for the birth registration area—South Dakota, Nevada and Arizona—and thirteen—Idaho, North Dakota, Colorado, New Mexico, Oklahoma, Texas, Missouri, Arkansas, Louisiana, Alabama, Tennessee, Georgia, Florida—which have laws "under trial."

Storing Roentgen-Ray Films—The National Fire Protective Association has tentatively adopted regulations for the storage and handling of photographic and roentgen-ray nitro-cellulose films. According to *Radiology*, the storage of unexposed films shall be in metal boxes or cans on shelves two feet above the floor, or in approved double wall cabinets vented to the outside air and exposed films stored in hospitals and similar institutions shall be kept in vented cabinets or in a vented storage room. Among many specifications given for the vented cabinets and the vented stage rooms are these: (1) Smoking shall be prohibited in rooms where films are stored and in developing or similar work rooms, and conspicuous "No Smoking" signs shall be posted in prominent places, (2) no film shall be stored within two feet of steam pipes, radiators, chimneys or other sources of heat, (3) the use of portable lights on extension cords in storage rooms is prohibited.

American Aid for German Medical Science—The total receipts of the American Aid for German Medical Science (THE JOURNAL, Nov. 17, 1923, p. 1702) amounted to \$28,856.81. Of this amount, \$22,379.32 was received as individual contributions from about 2,000 physicians, \$2,359.19 was received from students of medical colleges, and \$4,118.30 from medical and other organizations. According to the secretary of the committee, Dr. William F. Petersen, Chicago, the expense of collection has been met by members of the committee, so that the entire amount contributed has been used for the purpose specified. The auditors' report of this fund is on file at the headquarters of the American Medical Association. The disbursements from the fund were as follows:

Cash to Prof. Schwalbe	\$26,484.20
Food shipments	2,010.00
Freight and express on clothing	258.70
Audit collection charges etc.	103.91
	\$28,856.81

Statistics Concerning Liquors—To meet a constant demand for information concerning transactions in intoxicating liquors, the Treasury Department compiled statistics in pamphlet form. There were in bonded warehouses at the close of the fiscal year, June 30, 1923, 43,029,117.8 gallons of spirits. There were withdrawn for export to England between June and October, 1923, a total of 28,841.6 gallons, and in the months of November and December, 1923, for export to Germany, a total of 33,667.5 gallons. The total number of prescriptions by physicians who held permits for this fiscal year was 11,268,469, which accounted for 1,347,573.36 wine gallons of whisky, 30,752.72 gallons of wine, 9,945.35 gallons of brandy, 8,173 gallons of gin, 2,156.9 gallons of alcohol, 2,015.2 gallons of rum and only 300.38 gallons of U. S. P. and N. F. preparations fit for beverage use. The tax collected on distilled and fermented liquors for the fiscal year ending June 30, 1923, was \$30,358,085.63, and the cost of enforcement of the National Prohibition Act was \$8,135,842.44. There are in this bulletin of the Treasury Department various other statistics concerning intoxicating liquors, and many formulas for the denaturation of alcohol and the purpose to which each formula is suited.

Death of Dr. Henry Kraemer—Henry Kraemer, Ph.D., for eight years a member of the Council on Pharmacy and Chemistry of the American Medical Association, died at his home in Mount Clemens, Mich., September 10. Dr. Kraemer was born in Philadelphia, July 22, 1868. He graduated from the Philadelphia College of Pharmacy, 1889, from Columbia University, 1895 and received a Ph.D. from the University of Marburg, 1896. He was professor of botany and pharmacognosy at the School of Pharmacy, Northwestern University, 1896-1897; professor of botany and pharmacognosy, and director of the microscopic laboratory, Philadelphia College of Pharmacy, 1897-1917; professor of pharmacognosy, University of Michigan, Ann Arbor, 1917-1920 and director of the Kraemer Scientific Laboratory since 1920. From 1893 to 1917, he was editor of the *American Journal of Pharmacy*; from 1913 to 1921, a member of the Council on Pharmacy and Chemistry of the American Medical Association and since 1900, a member of the committee on revision of the U. S. Pharmacopeia. Dr. Kraemer was president of the American Conference of Pharmaceutical Faculties in 1917, a member and fellow of many scientific societies and fraternities, an honorary member of the International Congress on Pharmacy, 1910, and of the British Pharmaceutical Conference in 1919, a corresponding member of the Societe de Pharmacie de Paris, and the author of textbooks on botany and pharmacognosy.

Test of Right of Government to Limit Physicians' Prescriptions—The recent filing of a civil action in the Supreme Court of the District of Columbia (*Phyllis v. Blair, Comr.*) to test the right of the federal government to limit physicians in the number of liquor prescriptions, is the third suit of this character to come before the federal courts. The legal questions involved will finally be passed on by the United States Supreme Court. The suit filed in the District of Columbia will not be decided on until the October term of the court.

The two suits in the federal courts of other jurisdictions have been decided against the government. In *United States v. Freund* (290 Federal Reporter, 411) United States District Court of Montana it was held that "The provision of the National Prohibition Act prohibiting physicians from issuing more than 100 prescriptions for intoxicating liquors in any period of ninety days is an arbitrary restriction on the number of patients a physician shall treat, or is an unreasonable mandate to malpractice in respect to some of them and is invalid." The government has not appealed this case to the higher courts because it was based on information, and not indictment. In such cases no right to appeal rests in the government.

In the case of *Lambert v. Yellowley* acting federal prohibition director, filed in the United States District Court, Southern District New York (291 Federal Reporter, 640) it was held that the Eighteenth Amendment to the Constitution "was designed to bring about prohibition of intoxicating liquors for beverage purposes and not to put an end to its use for medicinal purposes." It further held that "It being admitted that intoxicating liquor is a valuable therapeutic agent in treatment of certain known diseases, and that in such cases it is 'necessary' that more than a pint be administered in ten days so much of the National Prohibition Act as prohibits physicians from prescribing more than such an amount within ten days is void, as 'necessary' at least includes that which is desirable, advisable and needful, if not indispensable."

In the last named case the federal government has filed an appeal to the circuit court of appeals. The New York case is a civil suit to enjoin the federal prohibition director and might have been appealed directly from the district court to the United States Supreme Court if a constitutional question alone were at issue. Other questions, however, necessitate an appeal first to the circuit court of appeals, but the case is likely to be appealed finally to the United States Supreme Court.

The decision in June, 1924, by the United States Supreme Court (*Eccard Brothers v. United States*) upholding the prohibition of the use of beer as a medicine will be largely depended on by government attorneys and anti-saloon league leaders as a precedent to control the litigation involving whisky medication. In that case the supreme court declared that "The Constitution confers upon Congress the power to make all laws necessary and proper for carrying into execution all powers that are vested in it." The court further added, "We are unable to say that the provision of the supplemental act (on the subject of beer) is an arbitrary and unreasonable exercise of the power vested in Congress by the Eighteenth Amendment, or that it is not 'appropriate legislation' for its enforcement."

Prohibition leaders assert that grave abuses may occur if the limitation of the whisky prescriptions of doctors is removed. They point out that in the fiscal year ending June 30, 1923, physicians in the United States wrote 11,268,469 liquor prescriptions. An interesting fact is that two states, New York and Illinois, accounted for 5,807,560 prescriptions, or more than half of the number for the whole country. The question of limiting physicians by law in the number of prescriptions is argued by dry leaders in part as follows:

In 1921 36,859 physicians had permits to prescribe liquor, in 1922 the number was 44,346, in 1923 the total number for the nation had arisen to 57,597. The prohibition leaders contend that there are two divisions among the medical profession as to the value of whisky. One group holds that the best therapeutic effect may be obtained by using alcohol with such medications as may be needed specifically, while the other group holds that the patient's attitude toward whisky makes it efficacious to administer alcohol in that form. Approximately half of the physicians of the United States do not prescribe liquor, and so do not enter the argument. More than half of the states prohibit entirely the use of whisky, brandy and wine for medicinal purposes, and twenty-nine of the states forbid the use of beer as medicine. Thus not only the federal law would have to be changed, but the laws of many states also, if present limitations are to be relaxed or removed.

LATIN AMERICA

Institute for Cancer Research in Peru—The *Reforma Medica* announces that the National Cancer Institute at Lima was inaugurated recently by the president of the republic. Dr. Eladio Lanatta, a local physician who has been making a special study of radiography in the United States, has been placed in charge of the new institution.

Personal—Dr. Guillermo Gastañeta, professor of surgery at Lima, was the guest of honor at a banquet tendered by the profession at Lima. The occasion was the twenty-fifth anniversary of his entering on the practice of medicine. Dr. Enrique Febres Odriozola was the toastmaster. A portrait in oils of Dr. Garfield de Almeida was recently unveiled at the Hospital São Francisco at Rio de Janeiro in tribute to his long service as director. Another portrait was unveiled the same day at a second hospital with which he is connected.

FOREIGN

Restrictions Removed from the Practice of Medicine—The *Schweizerische medizinische Wochenschrift* states that by a recent referendum the Swiss canton of Basel-Land voted in favor of throwing open the practice of medicine without restrictions. Our exchange adds: So this half of the canton seems to want to return to quackery again.

French Congress on Ophthalmology—The French Ophthalmologic Society has announced that the next meeting of its thirty-eighth congress is to be held at Brussels, May 11, 1925 and the following days. The program has not yet been made out, but information can be obtained from the secretary of the Société française d'ophtalmologie, Dr. R. Onfray, 6 avenue de la Motte Picquet, Paris.

Personal—The French Academy has awarded one of the Montyon prizes to Dr. Rodiet, chief of the Ville-Evrard Asylum for his manuscript "Reminiscences of an Army Medical Officer During the World War." He was in charge of all

the medical and relief work for refugees and others in his district, and recorded his observations as a physician and psychologist. The work is to be published later. The eighty-fifth birthday of Prof. B. Naunyn was celebrated recently. He is still continuing his research on diabetes and gallstones although he retired from academic work in 1904. He is soon to publish a volume of reminiscences. A gold medal has been presented by the city of Zaragoza to Dr. Rovo Villanova, professor of pathology, for his work as a physician, instructor and publicist. Dr. Salas Vaca is governor of the province of Murcia, Spain, and he was recently tendered a banquet by seventy physicians of the province. Drs. Decref and Tricharte have been appointed the delegates from Spain to the international congress on physical training, soon to be held in Denmark. The *Medicina Ibera* relates that Dr. Ortiz de la Torre is retiring from the chair of surgery at Madrid, having reached the age limit, and his friends are planning an ovation in his honor.

History of Sanatorium Patients—The Medical Research Council of England has published a report on the history of patients treated at the Frinley Sanatorium from 1905 to 1914. It was able to trace all but 343 of 3,400 patients treated during these years. At the beginning of the research it was discovered that about 1,400 patients had been lost sight of. Pains-taking efforts, advertising in the press, a personal canvass at every known address, and a study of the returns of the registrar general however, traced all but 10 per cent of the patients. The large majority of patients discharged as "worse" died soon after discharge, about one half of the deaths occurring in the first year. In this report statistical evidence is found to support the opinion of clinicians that the earlier the stage when the disease comes under sanatorium treatment, the greater the chance of survival, 79.3 per cent of the male patients admitted to the sanatorium in the incipient stage, and 89.7 per cent of the female, survived five years, the corresponding number of survivals after ten years being 65.2 per cent and 85.2, respectively. Of those discharged as "worse," 93 per cent were dead when the observations closed in 1918, and of these deaths 58 per cent occurred the first year after leaving the sanatorium, 56.8 per cent of the male patients who were moderately advanced cases on admission to the sanatorium were alive at the end of five years and 38.2 per cent at the end of ten years, and 67.4 and 49.7, respectively, of the female patients.

Deaths in Other Countries

Dr. Grall, inspector general of public health in the French colonies, and consultant in the campaign in the Near East during the World War, long stationed in French China, Guiana and New Caledonia. He has published authoritative works on tropical diseases. Dr. Trégant, Toulouse victim of a mountain-climbing accident. Dr. Nicolás Ramírez de Arellano, formerly professor of pathology and dean of the medical faculty of Mexico. Dr. M. Gross, Locle who represented the fifth generation of physicians in his family, aged 50. Dr. A. Chatelain, rector of the University of Neuchâtel and consulting psychiatrist to the Prefargier asylum, aged 85. He was a writer on general literary topics as well as on medicine.

Government Services

U S Public Health Service

Dr. Joseph Goldberger has been directed to proceed from Washington, D. C., to Milledgeville, Ga., and return, in connection with pellagra investigations. Dr. Roscoe R. Spencer has been relieved from duty in connection with the investigation of Rocky Mountain spotted fever at Hamilton, Mont., and assigned to the Hygienic Laboratory, Washington, D. C. Dr. Lunsford D. Fricks has been directed to proceed from Memphis, Tenn., to Tusculumbia, Ala., and return, to confer with the county health officer regarding a case of leprosy.

Hospitals Authorized

Pursuant to the instructions of the Secretary of War, June 27, 1922, the organization of general hospital, organized reserves No. 81 (Fifth Avenue Hospital Unit, New York City), evacuation hospitals No. 82 (St. Vincent's Hospital Unit, Portland, Ore.) and No. 83 (Good Samaritan Hospital Unit, Portland, Ore.) and surgical hospital No. 8 (McKeesport Hospital Unit, McKeesport, Pa.) has been authorized.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 25, 1924

Welfare of the Blind

A deputation from the National Union of the Professional and Industrial Blind received by the minister of health advanced reasons for objecting to the provisions contained in the Blind Persons Act amending bill, now before parliament. It was argued that it was neither necessary nor desirable to reduce the pensionable age limit from 50 to 30. It would place difficulties in the way of really effective training. Again, there were disabilities even greater than that from which the blind suffered. If the whole question of invalidity was gone into with a view to providing pensions for all such sufferers, then those blind persons who were laboring under additional physical and mental disabilities might properly come within the purview of such provisions, but the deputation questioned whether it was desirable to give a pension to a man at 30 to provide him with a minimum wage, and to ask the state at the same time to make a grant in aid of the continuity of his employment. The present system insured the cooperation of the voluntary system, municipal help, and state assistance, each performing its own distinctive functions and constituting a guarantee of permanence and stability. It was proposed to transfer the whole obligation to the county or county borough authorities and to refuse assistance to voluntary agencies. It was proposed also to establish the principle of a minimum wage, which local authorities would be required to provide. The blind themselves considered that, with the present machinery, they could obtain much better results and provide more substantially for their needs, while at the same time increasing the number of employable blind. The productive capacity of the average blind worker was not more than 50 per cent of that of the normal artisan engaged in the same occupations, and when local authorities realized this they would naturally be reluctant to speed up methods of training when they knew that the economic value of those workers for whom such training was necessary would not be comparable with the monetary values they would be required to provide. Directions were indicated in which the Blind Persons Act, 1920, could be strengthened. First, the powers of municipalities should be enlarged in order that they might take effective necessary measures to check preventable forms of blindness, and, secondly, the act should be so amended and strengthened as to deal directly with the problem of mendicancy among the blind. It might be so amended as to provide that the registration authorities should periodically, say every three years, be required to satisfy themselves that none of the societies registered in their area have become redundant. Another deputation—from the National League of the Blind—also waited on the minister of health to urge acceptance of the bill. It pressed for the abolition of the voluntary system in connection with the welfare of the blind and the establishment of direct municipal and state control, urging that the wages of blind workers should be not less than those paid to the unskilled municipal laborer. It asked also that competent blind persons should have preference over seeing persons in the appointment of home teachers.

Health Ministers on Birth Control

Mr. John Wheatley, the minister of health, received a deputation from the Standing Joint Committee of Industrial Women's Organizations. It was urged that the teaching of methods of birth control at maternity centers should no

longer be prohibited. In reply, Mr. Wheatley drew distinction between the question whether birth control was desirable and whether or not it should be taught in a particular place and manner. The question was highly controversial, and he doubted whether the working classes were really united on the subject. It seemed to him likely that if this subject were taught at maternity centers, many women, on account not only of religious but also of other objections, would be deterred from attending the centers. If it were true that women who were referred to private physicians or hospitals from the clinics were denied the knowledge which they were advised to get, he would see that such cases were investigated, but he must make it quite clear that while expressing no opinion at the moment as to the case for teaching of birth control, he was not prepared to agree to its introduction into maternity centers without the express authority of parliament.

Cotton Spinners' Cancer

Judgment has been given in a claim for compensation by an operative mule-spinner alleged to have contracted epithelioma of the scrotum in the course of his employment. The claim was made under the Industrial Diseases Act. The point was whether the disease was contracted in the course of his employment. The judge held that the applicant was entitled to compensation for injury by accident or disease arising out of and in the course of his employment within the meaning of the Workmen's Compensation Act. He thus summed up: 1 The applicant contracted the disease known as cancer of the scrotum. 2 The disease manifested itself for the first time while he was employed. 3 His employment brought him into contact with a moving bar, which caused friction close to the scrotum. 4 His employment involved his overalls near the scrotum being constantly sprinkled with liquid petrolatum. 5 This is an irritant. 6 The applicant, when at work, used overalls that could be easily penetrated by the oil. 7 The atmosphere in which he worked was humid. 8 Cancer of the scrotum is quite common among mule spinners. 9 Combine Facts 1 to 7, and the conclusion is irresistible that there is a connection between the disease and employment. Judgment was given for \$131, the respondents to pay the costs, and that the order would be for a declaration of liability on the part of the employers for the disease at any time hereafter.

This is regarded as a test case, and much importance is attached to the judgment, having regard to the fact that many more claims may depend on it. A claim has been made in the case of a cotton spinner who died two years ago from scrotal cancer, after having been out of the mill eight years, and has caused considerable alarm in Lancashire. The Operative Cotton Spinners' Amalgamation state that eighty-nine cases of scrotal cancer have been traced in their membership since 1920 of these, twenty-six have proved fatal. One hundred and forty-five cases of the disease have been traced by one of the inspectors of factories. An official of the Operatives' Insurance Section declares that nearly \$9000 paid by them in respect of this disease will have to be repaid under the foregoing judgment. It is, however, certain that, consequent on this claim, the judgment will be appealed against and will be keenly contested. But the operatives are said to be much more concerned in securing attention to the prevention of the disease than in the question of compensation, necessary as this is to the dependents of sufferers.

Heating of Houses a Lost Art

In a letter to the *Times*, a physician, Dr. D. Fraser Harris, calls attention to the fact that the Romans warmed their houses by the pleasantest and most scientific method—that of heating the floors of the rooms by means of hot air, which passed continually below them. The hot air of the hypocaust,

besides warming the floors of the rooms of these one story Roman villas, also heated the water for the bath. Medieval Europe lost this art, it forgot how to heat houses and it neglected to provide baths. On the cold earthen floors of the gloomy castles, rushes were spread, presumably to keep the feet of the lords and ladies warm, for the fire in the vast chimney of the banqueting hall must have been a most inefficient heater of that great apartment. If our feet are warm we are warm or, at least, comfortable all over, and if the floors are warm all is well, coloristically speaking, with the house. The small "open fire" of millions of small houses at the present day is an excellent ventilator, but a bad heater of the air of the room. The problem before the architect should always have been how to heat a room without neglecting to change its air—the essence of ventilation. The open grate is a wasteful and dirt-scattering source of domestic heat. When the building of houses is so much before the nation at the moment, it might be well to remember the efficient, clean, healthy Roman method of heating floors first.

Prohibition of Formaldehyd as a Food Preservative

The food preservatives committee of the ministry of health has issued an interim report on the treatment of chilled beef and other foods with formaldehyd. The committee points out that formaldehyd is a preservative substance which is inimical to life and to vital processes of all kinds, it is a powerful protoplasmic poison. When ingested, it exerts an irritant action on mucous membranes, and after prolonged use appears to cause inflammatory changes in the liver, and also in the kidneys. The effect is probably cumulative. All responsible traders are opposed to the use of this substance, there being an almost complete agreement among commercial and public health interests. The following conclusion is reached by the committee: "Having regard to the interests of the trader and of the consumer, we have no hesitation in recommending that the addition of formaldehyd or any of its derivatives to food or drink should be absolutely and specifically prohibited."

The Irish Problem

In previous letters, the difficulties that have arisen in the medical profession in consequence of the abolition of the Union and the establishment of the Irish Free State have been described. The minister for industry and commerce of the Free State has introduced a bill into the dail authorizing the general medical council, which sits in London, to continue the exercise of its jurisdiction in Ireland for a year, during which time it should be possible to have a proper authority established in that country if it was decided to remain separate from England or having full reciprocity with it. In the debate, the medical position was well described by Sir James Craig, a physician and member for Dublin University. He stated that a conference representing the Irish universities and licensing bodies had been held and had sent a report to the government pressing that no change in the present position should be made. There had been three courses open to the conference.

The first was the establishment of a separate medical council and medical register, with control of the medical examinations and physicians of the Free State, without relation to the existing council of Great Britain. Under this, physicians qualified and registered in the Free State would not be allowed to practice in Great Britain or its colonies. Medical students who had no hope of employment in the Free State would naturally seek to get qualified in England, Scotland or northern Ireland, so that they could be placed on the general register. To get on the colonial list they would have to apply to the privy council for recognition and to the general medical council for registration. There were at least 1,000 medical students in the Free State, and they were spend-

ing \$750 a year each, and if they were going to spend their money elsewhere on their education, a large sum of money would be lost to the Free State.

The second was the establishment of a separate medical council and a separate register for Ireland, and to seek to secure from the medical council of Great Britain a reciprocity similar to that which obtained between Great Britain and the colonies. It was not compulsory on the council to recognize all the institutions of the Free State, and it would be quite within its right to refuse to give recognition to certain licensing institutions. They had nothing to offer the English medical council for reciprocity to the Free State, and he did not think there was any doubt whatever that if they asked and were able to obtain reciprocity, so that all their graduates would be placed on the register, the colonies would come in and endeavor to claim similar reciprocity, and the general medical council had always set its face against that. The establishment of a general council and register here would cost a considerable sum of money, and physicians throughout the country would have to pay to run the council. As far as the distribution of those qualified in the Free State was concerned, on the register of 1922 there were 6,599 students who had qualified in the Free State, and of these there were resident outside of Ireland 52 per cent, resident in northern Ireland 12.5 per cent, and resident in the Free State 35 per cent, so that more than 50 per cent of the students who qualified in the Free State were living outside Ireland. The number of Irish physicians on the register was only 7 per cent, whereas the percentage of Irish representatives on the general medical council was twenty-one, so that they had at the present time a great deal more control than the number of physicians would entitle them to.

The conference was unanimous that it would be disastrous for any change to be made at the present time. It considered that the third proposition put forward would be the ideal thing, but would be very slow indeed to give up existing conditions unless perfectly satisfied that the reciprocity spoken of was assured before anything was given up. He had pleasure in supporting the second reading of the bill. The bill was passed.

PARIS

(From Our Regular Correspondent)

Aug 22, 1924

Kinematography in Relation to Medical Instruction

Drs H. L. Rocher and G. Jeanneney, agrégés professors at the Faculté de médecine of Bordeaux and surgeons to the hospitals of that city, recently gave an interesting account of the use of the cinematograph in medical instruction. Since the first successful attempts to represent objects in movement by means of projection apparatus (1895), great progress has been made and the cinematograph has become a scientific instrument of immense value. The former type of apparatus which in the time of Marey (1879), took twenty-four pictures has been improved so as to record 180 pictures a second (Nogues, a man jumping), 3,000 pictures (Bull, 1904, the flight of insects) and up to 50,000 a second in 1919 (Abraham and Bloch, ballistic phenomena). And, owing to the representation of objects magnified from 10,000 to 50,000 times it has become possible to project vital phenomena in micro-organisms or movements of cells. If we add color cinematography, kinematography *en relief* and kinematography of sound, it will be seen that kinematography can, at present, completely reproduce all the manifestations of life: movement, relief, color, sounds. It is possible, then, to analyze phenomena when projected with diminished speed, to magnify them (microkinematography), and finally, to synthesize extremely slow phenomena (germination, growth of a plant). In physiology, for example, one of the chief advantages of

the kinematographic method is the opportunity it presents to secure permanent records in place of fugitive observations, for instance, the pigeon whose cerebellum has been pierced and presents characteristic gyratory movements. Furthermore, once the results of such experiments have been made permanent through kinematography, it will be unnecessary to repeat so often the experiments and vivisections needed in the demonstration of courses. In surgery, the kinematograph makes it possible to reproduce with diminished speed delicate surgical operations, and to pause at particular features of the intervention. In connection with drill work in operative medicine, which falls, in France, in the summer semester making it difficult to keep cadavers in good condition, the kinematograph enables us to economize in cadavers, the kinematographic demonstration will repeat as often as is desired the delicate operative movements without wasting the subjects on which the student sure of the technic which has been demonstrated and commented on several times in his presence, will perform the final operation. In orthopedics, the kinematograph will allow us to study the diseases of the locomotor apparatus before and after treatment, the analysis of the patient's gait at diminished speed, and the rehabilitation of the maimed. The neurologic films will demonstrate to students the various clinical types of disease, such as chorea, tabes, multiple sclerosis and paralysis agitans. Instruction in hygiene will be furthered by films showing the purification of water supplies and the results of applying strict sanitary measures to a large city. In short there is not a single branch of medical science or of clinical instruction that may not profit from kinematography, so vast is its field of application. In a previous letter, I referred to its use for instruction in dental operations (*THE JOURNAL*, March 8, 1923, p. 806).

The material equipment has already been supplied in certain of our facultes de medecine and would not be difficult to procure in the institutions where it is still lacking. The only difficulties in the way of an introduction of the method are the acquisition and utilization of the films. However Rocher and Jeannel state that, with few exceptions, the film should constitute a sort of review of the whole course, with pauses at the interesting points, and, if necessary, comments by the instructor and exchange of questions and answers. The instruction film proper will be reserved mainly for operative medicine, physiology and neurology, in which it appears almost indispensable. Taking this point of view it will suffice for each faculte de medecine to have a small collection of films. The others can be borrowed either from a central kinematographic bureau, functioning as a division of the ministry of public instruction, in much the same manner as the bureau that supplies the primary schools and the army, or as a cooperative kinematographic society of the facultes de medecine. If these sources fail, the only thing to do is for the universities to purchase their own complete supply.

The Use of Hydrocyanic Acid to Rid Vessels of Rats

Dr H. F. Schoefer, a naval health officer, presented recently, to the Societe de medecine publique, a communication in which he discussed the grave accidents from intoxication that have occurred, of late, from the use of hydrocyanic acid to rid vessels of rats. He emphasized that the sanitary personnel that takes charge of the extermination of the rats should use great precaution to protect the members of the crew against intoxication, since accidents have occurred on American and Mexican boats and elsewhere. One should not place too much confidence in the assertions of nautical engineers that bulkheads are water tight and will not allow the passage of gas. During experiments with hydrocyanic acid to destroy the rats, the acid was found to penetrate the engine room just as if there were a free communication with the hold. Schoefer raises the question whether naval archi-

tecs whose present methods of control seem inadequate would not find it practicable to utilize the wide diffusion of hydrocyanic gas to test the water-tightness of a ship's bulkheads, guinea-pigs being used as experimental subjects. In this connection, it may be well to note that, in addition to the sudden syncope resulting from the inhalation of hydrocyanic gas, there is a weak intoxication, which is not fatal. This fact deprives this product of much of its value, since its principal merit seems to reside in the suddenness and the marked toxicity of its action.

The Decrease in Mortality at Bordeaux

In a recent number of the *Journal de medecine de Bordeaux*, Dr J. Vergely publishes some interesting statistics on the mortality of Bordeaux from 1876 to 1922, a period of almost half a century. For purposes of comparison he chose the years 1876, 1892, 1900, 1901, 1910 and 1922, as not being marked by any important social disturbance, the last year (1922) in particular being regarded as sufficiently removed from the influences of the war. Considered with reference to the total population of Bordeaux, the mortality for the years selected was

Mortality of Bordeaux, Selected Years from 1876 to 1922

Year	Per Thousand Population	Year	Per Thousand Population
1876	29.2	1901	20.7
1892	24.9	1910	19.1
1900	21.5	1922	19.1

These figures evidence a constant decrease in mortality, which, in a period of forty six years, was diminished by 10.1 per thousand of population. But it is especially mortality from infectious diseases that is rapidly decreasing, owing to the progress in public health administration. The mortality from a number of infectious diseases follows.

Mortality at Bordeaux from Certain Infectious Diseases, for Selected Years 1876 to 1922

	1876	1892	1900	1901	1910	1922
Typhoid fever	74	90	41	32	32	11
Measles	27	26	15	9	34	16
Scarlet fever	10	8	4	5	6	1
Whooping cough	30	18	24	16	37	11
Diphtheria	128	96	40	44	17	16
Enteritis (children under 2 years)	327	305	220	212	188	177
Puerperal septicemia	37	30	10	9	5	11
Totals	633	754	344	317	319	243

It will be noted that there has been a considerable decrease in the mortality from diphtheria as the result of the use of antidiphtheric serum. Infantile enteritis causes still many deaths but the number is constantly decreasing. Typhoid fever, which around 1875, produced about seventy-five deaths annually, caused from 90 to 100 deaths in 1890-1892, at which time an epidemic prevailed. But since a water supply almost free from micro-organisms has been secured for Bordeaux, typhoid has not been claiming one fifth as many victims. It should be considered also that many of the typhoid fever patients treated in Bordeaux contracted the disease outside that city. Smallpox has practically disappeared from Bordeaux, in 1922 there was only one death from that cause.

Also the mortality from tuberculosis shows a notable decrease, in 1922 the total number of deaths from this disease was 532, as compared with 824 in 1876 which signifies a lowering of the mortality from 4.2 to 1.9 per thousand of population. From other forms of tuberculosis there were, in 1922, fifty-two deaths, as against 109 in 1901 and 306 in 1876. This noteworthy decrease in mortality from tuberculosis is due to the energy with which the antituberculosis crusade has been carried out in Bordeaux.

The mortality from cancer, on the other hand, is increasing. The number of deaths from this cause for the same selected years was

*Number of Deaths from Cancer in Bordeaux,
Selected Years, 1876-1922*

Year	Number of Deaths	Year	Number of Deaths
1876	205	1901	230
1892	212	1910	291
1900	224	1922	379

But the mortality from cancer is very irregular, and, in examining the statistics for the period from 1900 to 1922, Vergely noted that in 1904, 1905 and 1916 more deaths occurred than in 1922. However, since 1914, the number of deaths from cancer has never dropped below 300, while 1903 was the first year in which this figure was reached. There has been, therefore, an unquestionable increase in mortality from cancer. No doubt, a part of the excess mortality may be due to the fact that cancerous patients from the small towns and rural districts come to the city for treatment and die there, thus adding to the total number of deaths, but this factor will hardly suffice, in itself, to explain so marked an increase.

The Birth Rate of Large French Cities

The Alliance nationale pour l'accroissement de la population française has published a table showing the number of births recorded in the ten largest cities of France during the second quarter of 1924 and including a comparison with the corresponding period of 1921 and 1923.

*Births in Principal French Cities, Second Quarter,
1921 1923 and 1924*

Cities	1921	1923	1924
Paris	13 640	11 824	11 657
Marseilles	3 087	2 959	2 765
Lyons	2 549	2 279	2 242
Bordeaux	1 475	1 258	1 198
Lille	1 383	1 093	1 070
Strasbourg	1 138	1 071	1 120
Nantes	1 009	830	791
Toulouse	803	757	713
Saint Etienne	886	744	780
Le Havre	987	879	808
Totals	26 957	23 694	23 144

The total number of births in the ten cities mentioned was 550 less in 1924 than in 1923, and 3,813 less in 1924 than in 1921. The number of marriages in 1924 was 441 less in 1924 than in 1923 (16,016 in the second quarter of 1924, as against 16,457 in the corresponding quarter of 1923). As for the deaths the quarter showed a decrease of 354 as compared with the same quarter in 1923 (20,201 deaths in the second quarter of 1924 and 20,555 deaths in the second quarter of 1923).

MADRID

(From Our Regular Correspondent)

July 30 1924

Kineplastic Surgery

Dr G Bosch Arana of the Buenos Aires Medical School recently lectured on kineplastic amputations at the National Academy of Medicine. He described the improvements by Sauerbruch. Dr Bosch Arana explained how the muscles surrounding the bone are now kept vital, so that their contractile power may be used, thus allowing the employment of members otherwise useless. He recommended an extensive tunnel, covered by as much skin as possible. Trunk anesthesia is applied with procain to stop pain, although permitting contraction in order to show how much muscular tissue remains usable. Films were used to show the different steps

of such amputations. After the muscle underneath this skin bridge has been isolated, the muscular flap is placed round the bridge and the flap is covered with the remainder of the skin. Healing is by first intention. Through the tunnel some rings are inserted, they are connected afterward with orthopedic appliances, which permit the patients a number of activities. Progress has consisted in completing the stump in one step, a modification adopted by Sauerbruch himself, and an increasing mobilization of the muscles, thus enlarging the capacity of the patients for work.

REHABILITATION OF CRIPPLES

The day after Bosch Arana's lecture, Dr Decref spoke before the National Academy of Medicine on the National Institute for the Rehabilitation of Cripples. He discussed the solution given to this problem in different countries. Germany had anticipated the problem, creating institutions for the rehabilitation of workmen who had been victims of accidents in factories or mines. Decref thinks that these institutions should be under civilian control, since such accidents occur as the result of industrial activity. Even soldiers, on becoming incapacitated, cease to be service men, and their training should be governed by civilian principles. In France, where no such institutions were available before the war, their creation caused a scandalous exploitation. In order to avoid this, maimed soldiers were required to select their appliances before a special committee, but manufacturers dodged this difficulty by coming in advance to an agreement with patients, and dividing with them the extra amount paid by the government. Decref warned that something similar might happen in Spain. Incidentally, he attacked kineplastic operations, stating that the orthopedic appliances they require are really only for exhibition purposes. Among the thousands of patients using such devices, a few prove to be real virtuosos. These elaborate and expensive appliances are not actually used by workmen, who prefer simpler devices. All such appliances require rings, and the pressure under working conditions causes ulcers and dermatoses. Decref ended by protesting against the employment of army medical officers in such institutions, as their training and functions are altogether different. He also showed lantern views of the new National Institute for the Rehabilitation of Cripples.

PLASTIC AND RECONSTRUCTIVE SURGERY

Plastic surgery and kineplastic operations have attracted much attention here since the conflicting views expressed in Bosch Arana's and Decref's lectures. Professor Spitzky of Vienna described in the Madrid Medical School the progress attained in this modern field of surgery. Spitzky read his paper in Spanish, and Professor Recasens, the dean of the school, in introducing the Vienna professor, did not fail to emphasize this courtesy. The practice of speaking in Spanish, initiated by the roentgenologist Professor Sauer, has been followed by almost all the professors who have since come to Madrid. On behalf of Spitzky, it should be added that he is the one who has thus far shown the best knowledge of Cervantes' language. Dr Spitzky stated that the Vienna Orthopedic and Rehabilitation Hospital under his direction had been established after the first few months of war, as the Austrian government realized immediately that the number of wounded men would be excessive. In effect, there have been as many as 3,600 patients at one time in the hospital. Dr Spitzky has already performed more than 10,000 amputations. From this enormous experience he has derived some basic conclusions. The first and all important is that, in amputating, the surgeon must be as conservative as possible. He must try to preserve the largest possible amount of tissue and therefore, skin, since this skin, with its exquisite sensitiveness, lends itself to many important uses. A square inch of skin furnishes many thousands of functional

possibilities. There is no use in sacrificing, as done formerly, skin or tissue to create a stump to support a prosthesis. Appliances have no such sensitiveness as possessed by the skin.

Dr Spitz explained the many improvements in the amputation of different extremities, beginning with the fingers. Instead of the orthopedic holder formerly used to replace the thumb, real thumbs made out of rib bone are now substituted. The thumb should not be removed, even if paralyzed. One may create an artificial arthrodesis, introducing a needle for three weeks, thus forming a stiff thumb that may be used as an opponent to the other fingers. As to the fingers, they should be removed only when they are in forced flexion caused by scar lesions. Kineplastic operations in the forearm are contraindicated in workmen, unless both forearms have been mutilated. Orthopedic appliances now used are proper for intellectual workers, but not for manual laborers. Workmen need a stump as a support. In training these patients, they must be taught to replace the lost hand with the other one. In artificial hands, function occurs very far from the resting point of the appliance, and only simple devices are necessary to hold tools. Spitz uses simple soft leather holders. In exhibiting patients provided with the so-called Krukenberg grasping fork, he said that, by the mere removal of some useless muscular masses, he had succeeded in covering both ends of the holder, i. e., the radius and the ulna, with muscle and skin. These forks or holders are very useful for workmen. In some cases he has tunneled the lower arm, inserting under the biceps, between this muscle and the bone, a tube-shaped skin flap from one side of the chest, still attached by a pedicle to the chest. After the free end unites to the skin wound in the outside surface of the arm, the other end is cut free, thus furnishing a skin bridge under the biceps. This bridge is used to insert an ivory roll, also tunneled, to permit the introduction of little steel bars, which will support an artificial arm. In joint synostosis, his technic is very simple and efficient, as shown by a number of photographs. He chisels through the ankylosis, refills this opening with melted animal fat, preferably pig's, and in order to keep apart the soft parts, he resorts to bronze plates similar to those used by dentists. When the hand is preserved, but because of loss of the upper bones a wrist-drop results, Spitz ingrafts above it almost all the fibula. One patient of this type was exhibited. In making this kind of implantation, the inlay must fit snugly into the receiving bone. The transplanted bone must be provided with sufficient tissue.

Spitz's lecture stressed two points: conservatism in the surgery of extremities and adjusting of the training of cripples to their future position in life. He praised highly the Institute for Rehabilitation of Army Cripples under the jurisdiction of the Spanish Medical Corps, and directed by Dr Bastos, a medical officer. Spitz spoke more fully on the same subject a few days later, in the National Academy. In a large series of slides he presented the orthopedic appliances used in his Vienna institute. As to elaborate appliances he said they were Sunday luxuries, as cripples use them only when going out on Sundays and to greet ladies in the street. In the shops of the institute, they manufacture all kinds of appliances, both simple and elaborate ones, and the demand for the first is as a hundred to one contrasted to the latter. In this hospital they have treated 30,000 wounded and performed 10,000 amputations, 3,000 of which were in the upper extremities. Of course this experience should not exclude kineplastic operations when indicated, especially when the patient does not depend on his labor for a living. In many cases Spitz has seen the patients give up the supposed advantages of kineplastics and exchange his prosthesis for a simpler device.

BERLIN

(From Our Regular Correspondent)

Aug 16, 1924

Infectious Diseases in 1923

Whereas in the first half of 1923 there was a marked decrease in the incidence of notifiable diseases as compared with the first half of 1922, in the second half of 1923 there was such an increase in the reported cases of typhoid and dysentery that the prevalence of those diseases in 1923 was greater than in 1922. Quite in accord with the locally limited epidemic character of these two diseases, their incidence in 1923 varied greatly in different regions. The smallest number of cases of typhoid was reported from southern Germany, while the maximum developed in northern Germany. However, the regional differences in the incidence of dysentery were much less than for typhoid. The wider prevalence of dysentery was confined to Prussia (180 cases to 10,000 population), Hessen (140) and Saxony (123). In the remaining provinces the morbidity remained far below the average for the empire (137). In addition to dysentery and typhoid, the only infection that showed an increase in 1923 over 1922 was rabies. The large number of bite injuries (1,271) points to the wide prevalence of rabies among animals, and there has been no recedence as yet. As for diphtheria and scarlet fever, while the records for 1923 showed still considerable improvement over 1922, the decrease was not so marked as in 1922 compared with 1921. While in both these diseases there was a decrease in the case incidence, a diminution in mortality has thus far been observed only for diphtheria. In puerperal fever, the decrease in the absolute number of cases in consequence of the coincident decrease in the birth rate was much greater than the decrease in the percentage of cases to the total number of births (497, 444 and 419 cases per 10,000 births in the years 1921, 1922 and 1923).

*Case Incidence of the Notifiable Diseases in Germany
Among the Civilian Population 1921-1923*

	Number of New Cases			Per 10,000 Population		
	1921	1922	1923	1921	1922	1923
Diphtheria	73,018	37,010	31,942	10.20	6.19	5.19
Scarlet fever	48,251	32,448	27,234	7.81	5.29	4.42
Typhoid	18,895	10,993	13,161	3.04	1.70	2.14
Dysentery	31,634	5,046	8,449	5.11	0.81	1.37
Puerperal fever	8,006	6,471	5,992	1.70	1.05	0.91
Bite injuries			1,271			
Rabies	43	2	61	0.01	0.01	0.01
Tetanus	1,587	1,732	1,191	0.30	0.29	0.19
Cerebrospinal meningitis	690	1,022	1,147	0.11	0.16	0.19
Anthrax	10	129	106	0.01	0.07	0.01
Typhus	513	396	27	0.09	0.06	0.00
Trichinosis	16	110	25	0.00	0.02	0.00
Smallpox	688	111	17	0.11	0.04	0.00
Recurrent fever	53	31	4	0.01	0.01	0.00
Clanders	1	2	1	0.00	0.00	0.00

Psychology in Medicine

In an address entitled, "The Exaggeration of Psychologic Influences in Medicine," delivered before the Aerztliche Gesellschaft für Sexualwissenschaft und Konstitutionsforschung, Geheimrat Kraus took a strong stand against the exaggeration of psychic causes in the genesis, exacerbation and course of various diseases. While it is no doubt true that psychology will continue to maintain a place in medicine, one must not confuse the fundamental psychologic qualities of the mind with the bases of science in general and the special sciences. As long as physiology examined the living organism in accordance with the exact rules of the mode of thinking applicable to the natural sciences, our knowledge of and our power over the phenomena of life continued to increase in the same ratio as did the power of the natural sciences over inanimate nature. It must be regarded, therefore, as nothing less than a crisis in the development of the natural sciences that the physiologist, when he decides to delve into the most complicated relationships of living organisms to the external

physical world, instead of clinging objectively, as was his wont, to the connection between external manifestations and the reactions of the organism, suddenly begins to propound vague theories concerning inner phenomena in animals, after the analogy of his own mental processes. It is no less a crisis when the clinician, guided in the ultimate analysis, rather by mesmerism than by scientific psychology, in America by the way of Christian science or new thought, and in Europe through the paths of hypnotism, suggestion and psychanalysis, reaches the point at which he feels compelled to regard supposedly pure psychic processes as causes of disease.

In opposition to such aberrations, Kraus recommended a return to an exclusively objective study of the relationships of the external world and the organism and the determination of the essential and fundamental union or connecting link between the two as consisting of relations taking place purely in accordance with natural laws to be discovered through observation, experiment and cogitation. Biology, he brought out, should view certain problems in the natural sciences, especially objectivity or external reality, from a somewhat different angle than usual. With regard to the history of the two ideas "subjective" and "objective" and the present status of the theory of objectivity, Kraus referred his hearers to the modern criticism as represented by the Marburg school and to the literature of objective idealism as set forth in the writings of Mach, Poincaré, Prantl, H. Cohen, G. Cantor, H. Rickert, E. Husserl and F. Kuntze.

Kraus emphasized that, to his mind, it was an error to hold that, by means of objective conceptions gained directly through observation, the most we can hope to accomplish is to produce cumulative, catalogue-like surveys or cross-sections of what we find in the external world (for example, a list of the warm and cold points on the skin or a number of reflexes), but that we can never take the accumulated isolated facts and develop a real definition or generality that will take account of the data discovered and those yet to be determined.

After discussions in the realms of mathematics and physics, Kraus took up physical chemistry. From time to time, man is inclined to indulge in speculations as to the origin of life, the source of living matter or force, and other unsolvable problems. Through study of the natural sciences, we come in contact with the earliest manifestations of life. Through the operation of certain factors (reductive power of the living substance, evolution of carbonic acid, vegetative electrolytic currents and concomitant electric phenomena) certain electric processes (for instance, in the germinating seed) that are the concurrent phenomena of the first stirrings of life are observed before chemical reactions or the microscope reveal any other physiologic processes. On the basis of their conjoint researches, Kraus and Zondek are convinced that the most important motive power or force acting on the body fluids and tissue substances to move them is internal pressure (turgor), which is a tangible quantity that can be measured. As this is mainly a matter of water distribution and of alternate charging of the marginal surfaces in the structure of the living mass with two antagonistic sorts of ions, we may substitute for this tonus simply "electrolytic turgor." From this point, Kraus develops the idea further, up to the problems of consciousness. He is prepared to be accused of thrusting psychology to one side only to admit it again in the form of symbolic reflexes. If the world consists of formed individualized substance, if the formation process is as much a reality as is the general law that unites all forms, then, he feels, the psychologic problem has been sufficiently eliminated or thrust back. As Kraus views it, natural laws are but the operation of the "ideal" content of natural phenomena. The succession of all physical and psychic events becomes to him a purely logical arrangement.

Marriages

ROGER SIMMONS COUNTRYMAN, St Paul, to Miss Dorothy Tripp of New Westminster, B C, Canada, September 3

ALVAN AUFREY ROSENBERG to Miss Helen Platt, both of Benton Harbor, Mich., at Niles, August 21

ALBION VICTOR OHLSON, Kane, Pa., to Miss L. Elizabeth Jones of Plymouth Meeting, Pa., August 6

LUCIUS GASTON GAGE to Miss Margaret Elizabeth White, both of Charlotte, N C, August 16

ARTHUR J CASSELMAN, Camden, N J, to Miss Lulu May Boyd, of Rochester, Minn., July 21

PAUL ROSCOE HOLTZ to Miss Irene Martha Jacobson, both of Wheatland, Wyo., September 6

ARTHUR MILLS CORWIN to Mrs Marion Dwyer, both of Chicago, at Joliet, Ill., July 21

WILLIS W LASHER to Miss Ethyl Gaffney both of New York, August 26

IRA OSCAR PARK to Miss Julia Embry, both of Union City, Tenn., August 9

JOSEPH ELMER O'BRIEN to Miss Mae M Getz, both of Erie, Pa., August 14

Deaths

Edward John Mountain ☉ New York, University of Vermont College of Medicine, Burlington, 1898, lecturer and for eleven years instructor in orthopedic surgery at the New York Post-Graduate Medical School, on the staffs of St Mark's Hospital, and the New York Polyclinic Medical School and Hospital, aged 58, died, September 1, of coronary sclerosis

Joseph Arthur Goodson, Lexington, Ky., Vanderbilt University Medical Department, Nashville, Tenn., 1899, member of the Kentucky State Medical Association, for nine years superintendent of the Eastern State Hospital for the Insane, formerly Webster County physician and health officer, aged 49, was accidentally drowned, August 29, while bathing in his home

William Tahaferro Brown, Burnt Mills, Md., University of Virginia Department of Medicine, Charlottesville, 1891, College of Physicians and Surgeons, Baltimore, 1892, member of the Medical and Chirurgical Faculty of Maryland, president of the Montgomery County Medical Society, aged 60, died, September 1, of heart disease

Randolph Bryan Carmichael ☉ Washington, D C, Jefferson Medical College of Philadelphia, 1889, professor of dermatology at the George Washington University Medical School, Washington, member of the American Dermatological Association, aged 55, died, September 3, at Fredericksburg, Va., of cerebral hemorrhage

Arthur Herbert Kimball ☉ Washington, D C, Johns Hopkins University Medical Department, Baltimore, 1902, member of the American Academy of Ophthalmology and Oto-Laryngology and the Washington Society of Ophthalmologists and Otologists, aged 49, died, August 24, of uremia

Joel Brown Woodhull, North Bennington, Vt., Medical Department of the University of the City of New York, 1884, member of the Vermont State Medical Society, aged 70, died, August 30 at the Putnam Memorial Hospital, Bennington, of cerebral hemorrhage

Carlisle Johnston, St George, S C, Gate City Medical College, Texarkana, Texas, 1903, member of the South Carolina Medical Association, formerly mayor of St George, aged 43, died, August 22, at a hospital in Charleston, following an operation

Julius Caesar Rappold, Jr ☉ Brooklyn, Medical Department of the University of the City of New York, 1890, member of the American Association for the Advancement of Science, aged 54, died, September 5 of cerebral hemorrhage

John F Peick, Reading Pa, Jefferson Medical College of Philadelphia, 1872, member of the Medical Society of the State of Pennsylvania, past president of the Berks County Medical Society, aged 72, died, August 24 of arteriosclerosis

Israel M Slingerland, Fayetteville, N Y, Albany Medical College, 1883, member of the Medical Society of the State of

New York, for fourteen years president of the board of education, aged 68, died, August 9, of heart disease

Mahlon L. Pearson, Aberdeen, Wash., Medical Department of the University of the City of New York, 1879, aged 73, died, July 6, at the Western Washington Hospital for the Insane, Fort Steilacoom, of exhaustion

Silas Metz Hazlett, Allensville, Pa., Jefferson Medical College of Philadelphia, 1897, member of the Medical Society of the State of Pennsylvania, aged 53, died recently, of carcinoma of the liver and intestine

Mathew Harris Echols, Wills Point, Texas, Kentucky School of Medicine, Louisville, 1891, member of the State Medical Association of Texas, aged 67, died, August 26, at San Antonio, of heart disease

Franklin Newton Staub, Pittsburgh, Jefferson Medical College of Philadelphia, 1874, aged 71, died, August 27, at the Western Pennsylvania Hospital, of injuries received when struck by an automobile

Henry C. Dial, Gilmer, Texas, University of Louisville (Ky.) School of Medicine, 1886, member of the State Medical Association of Texas, aged 66, died recently, at Dallas of cerebral hemorrhage

Francis Irwin Welch, Newman, Ga., Medical Department of the University of the City of New York, 1877, aged 72, died August 23, of a self-inflicted bullet wound while suffering from ill health

Henry C. W. Showalter, New Holland, Pa., Jefferson Medical College of Philadelphia, 1883, formerly president of the board of health, aged 63, died recently, of cerebral hemorrhage

John A. Woodley, St. Matthews, S. C., Baltimore (Md.) University School of Medicine, 1887, member of the South Carolina Medical Association, aged 59, died suddenly, August 19

Bascom H. Vaughan, Hillsboro, Texas, University of Alabama School of Medicine, Tuscaloosa, Ark., 1876, member of the State Medical Association of Texas, aged 73, died, August 1

James Walter Ferguson, West Salem, Ohio, Cleveland University of Medicine and Surgery, 1876, formerly mayor of West Salem, aged 73, died August 22, following a long illness

Albon S. Fichtner, Johnstown, Pa., College of Physicians and Surgeons, Baltimore, 1882, formerly member of the board of health, aged 66, died, August 24, of mitral regurgitation

Flora Isetta Harbaugh Barnett, Chicago, Northwestern University Woman's Medical School, Chicago, 1892, aged 61, died August 30, at St. Vincent's Hospital, Belleville, Ill.

William Francis Jones, McCook, Neb., Miami Medical College, Cincinnati, 1900, formerly mayor of McCook, aged 50, died, August 23, at Windsor, Colo., of heart disease

James Hopkins Pake, Bainbridge, Ohio, Starling Medical College, Columbus, 1883, member of the Ohio State Medical Association, aged 67, died, August 23, of heart disease

John R. Persons, Seattle, Northwestern University Medical School, Chicago, 1901, aged 48, died August 23, at the Seattle General Hospital, of cerebral hemorrhage

Joseph Pierre Desrosiers, Colfax, Calif., University of Montreal Medical Faculty, Montreal, Que., Canada, 1906, aged 42, died, August 3, of cerebral hemorrhage

Clifton McKinney Walter, Westminster, S. C., Atlanta (Ga.) Medical College, 1891, member of the South Carolina Medical Association, aged 58, died in July

Charles C. Van Waters, Ogdensburg, N. Y., Medical Department of the University of the City of New York, 1879, aged 69, died, August 25, of arteriosclerosis

Newton D. Ray, Woden, Iowa, State University of Iowa College of Medicine, Iowa City, 1889, aged 69, died recently, of heart disease and arteriosclerosis

William A. McGeehan, Leechburg, Pa., University of Wooster Medical Department, Cleveland, 1873, aged 77, died in June, of cerebral hemorrhage

William C. Kreul, Milwaukee, Milwaukee Medical College, 1901, aged 50, died in August, at the Sacred Heart Sanitarium, following a long illness

John W. McCarley, Memphis, Tenn., University of Louisville (Ky.) School of Medicine, 1881, aged 67, died, August 11, of angina pectoris

Noah S. Wood, Greencastle, Ind., Central College of Physicians and Surgeons, Indianapolis, 1884, aged 65, died, August 9, of angina pectoris

John Francis Cremin, New York, Dartmouth Medical School, Hanover, N. H., 1891, aged 65, died, August 20, of injuries received in a fall

William N. H. Folk, Tillman, S. C., Medical College of the State of South Carolina, 1884, aged 64, died, June 27, of carcinoma of the stomach

Josiah A. Jones, Monticello, Ky., Bellevue Hospital Medical College, New York, 1867, Confederate veteran, aged 83, died recently, of senility

Jesse B. Paschall, Fulton, Ky., Washington University Medical School, St. Louis, 1909, aged 42, died, August 22, at Louisville, of uremia

Charles Martin Sleeper, South Berwick, Me., Medical School of Maine, Portland, 1883, aged 68, died, August 26, following a long illness

George Russell Cottingham, Remington, Va., University College of Medicine, Richmond, 1900, aged 45, died August 23, of chronic nephritis

Calvin Ford Ormiston, Cedar Rapids, Iowa, Bennett Medical College, Chicago, 1890, aged 78, died, June 28, of cerebral hemorrhage

Charles Cleveland Fitch, Visalia, Calif., Beaumont Hospital Medical College, St. Louis, 1890, aged 68, died, June 18, of cerebral hemorrhage

Walter F. Snorgrass, Bristow, Okla., Beaumont Hospital Medical College, St. Louis, 1890, aged 59, died, August 10, of angina pectoris

Ernest Van Cott, Salt Lake City, Utah, Rush Medical College, Chicago, 1903, aged 49, died suddenly, August 27, of angina pectoris

Champion Hiram Judson, Dobbs Ferry, N. Y., Medical Department of Columbia College, New York, 1871, aged 81, died, September 6

Gideon Osborne Smith, Odessa, N. Y., University of Buffalo Department of Medicine, 1860, aged 88, died recently, following a long illness

John Carl Gilstrap, Flowery Branch, Ga., Georgia College of Eclectic Medicine and Surgery, Atlanta, 1914, aged 36, died, May 27

John Kirby Smith, Fredericktown, Mo., Barnes Medical College, St. Louis, 1899, aged 55, died recently, of cerebral hemorrhage

John W. Page, Burlington, N. C. (nongraduate), aged 66, died, August 22, at a hospital in Greensboro, following a long illness

Henry Yeoman Mott, Davidson, N. C. (years of practice), Civil War veteran, aged 83, was found dead in bed August 14

James Abbott Harper, Shelburn, Ind. (licensed, Indiana, 1897), Civil War veteran, aged 84, died, August 21, of senility

Simon P. Eckel, Mansfield, Ohio, New York Homeopathic Medical College, 1881, aged 68, died, August 16, of paralysis agitans

Samuel Foster March, Kansas City, Kan., Eclectic Medical Institute, Cincinnati, 1884, aged 74, died, August 23, at Paola

John Tilgham Walker, Holstein, Iowa, Rush Medical College, Chicago, 1873, aged 76, died recently, of arteriosclerosis

George W. Martin, Athens, Ohio, Eclectic Medical Institute, Cincinnati, 1876, aged 80, died recently, of pneumonia

James Melvyn, Salmon, Idaho (years of practice), aged 67, died, June 14, of injuries received when gored by a bull

Charles K. Jones, Kingston, Mo., Missouri Medical College, St. Louis, 1886, died, August 19, of osteosarcoma

James H. Teague, West Asheville, N. C. (licensed, North Carolina, 1885), aged 70, died, August 15

William W. C. Brown, Lafayette, Ind. (licensed, Indiana, 1897), aged 82, died suddenly, August 20

Grant S. Staub, Dayton, Ohio, Toledo Medical College, 1896, aged 59, died, July 5, of paralysis

George W. J. Lee, Sheffield, Iowa, Rush Medical College, Chicago, 1869, aged 70, died, August 17

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

THE SCIENTIFIC AMERICAN ON ABRAMS' "ELECTRONIC REACTIONS"

"At Best It Is an Illusion, at Worst It Is a Colossal Fraud"

In March, 1922, there was published in this department of THE JOURNAL the first of a series of articles on Albert Abrams and his preposterous theories and practices. The immediate result of the first article was to cause Abrams to resign from his local medical society and from the American Medical Association thus relieving both organizations of a situation that had become a stench. Following THE JOURNAL'S first article came a spirited defense of Abrams from Upton Sinclair, a well-meaning visionary who has pronounced dicta at various times on such subjects as socialism, education, the venal press, religion and fasting as a cure-all. Subsequent articles showed that the Abrams cult was made up to no small extent of crude and blatant advertising quacks, near-quacks and faddists with a sprinkling of men who, while they liked to be considered respectable, were essentially unscientific and invariably venal.

During the time that the inherent quackishness of Abrams and his followers was being made plain, it was repeatedly suggested that the American Medical Association conduct a scientific investigation of Abrams' claims. THE JOURNAL pointed out that Abrams had been given an opportunity at different times of subjecting his theories to scientific test and had rejected these opportunities. For the American Medical Association, as an organization of scientific men, to conduct an investigation of Abrams' theories would be to dignify that which was preposterous on its face. Because the Association refused to treat Abramsism as a scientific possibility Abrams himself loudly proclaimed an alleged desire to have his methods and theories tested. Finally a lay publication of unimpeachable character undertook the very thing that Abrams had clamored for. The *Scientific American*, a magazine whose standing is established on both sides of the Atlantic, announced in its issue of October, 1923, that it was undertaking a thorough investigation of the "Electronic Reactions of Abrams" and "Electronic Medicine" in general.

When the announcement was first made THE JOURNAL received many caustic letters from physicians in which it was intimated that the *Scientific American's* investigation was merely going to be an advertising "stunt" for the Abrams cult. About the same time the *Scientific American* itself received equally bitter accusations from the disciples and defenders of Abrams charging that that publication had been subsidized by the "Medical Trust" and that a fund—ranging all the way from \$100,000 to \$1,000,000, according to the state of imagination—had been turned over by the American Medical Association to the *Scientific American* for the purpose of discrediting Abrams and his theories. The *Scientific American* has published twelve papers in as many issues of the magazine and the twelfth and last one appears in the current issue and contains the verdict.¹

The investigation which this magazine instituted was carried out by a committee composed of the following men: Austin C. Lescarbourea, Managing Editor of *Scientific American*; a member of the American Institute of Electrical Engineers, and a specialist in electrical and radio work, acted as secretary for the committee, did the major part of the investigating work and prepared the articles that appeared; J. Malcolm Bird, one of the Associate Editors of the *Scientific American* and for some years a teacher of mathematics at Columbia

University; Robert C. Post, a civil engineer and a member of a well-known firm of structural steel engineers and contractors; Dr. Walter C. Alvarez, well known to readers of THE JOURNAL as Associate Professor of Research Medicine in the University of California and a man who has done considerable research work; Dr. William H. Park, Director of the Bureau of Laboratories of the New York Health Department and Consulting Bacteriologist both for the New York State Department of Health and also for the United States Quarantine Service.

This committee spent more than a year in examining the so-called "Electronic Reactions" and their application in diagnostic and therapeutic work. It studied the technique in detail, attended numerous demonstrations and the members submitted themselves to Abrams' diagnosis in order to learn how the latter appeared from the patient's point of view. The committee procured the genuine Abrams apparatus for first-hand study and experimentation; it made tests with a number of Abrams' disciples for the purpose of determining the accuracy of the so-called reactions and in short, it kept in touch with the "Electronists" from its high priest Albert Abrams until the time of his death down to the most obscure "ERA" practitioner. Nor was this all. The committee studied alleged cures, maintained a voluminous correspondence with those who claimed to have been benefited by the "Electronic Treatment" and, in fact, carried on the very kind of investigation that Abrams himself asked for—but never expected or desired to get.

And the results of this exhaustive investigation may be summed up in the sentence published at the head of the last article in the current issue of the *Scientific American*: "The Electronic Reactions of Abrams and Electronic Medicine in General Found Utterly Worthless." It is expressed in a little more detail in the opening paragraph of the *Scientific American's* latest and final article:

"The so-called Electronic Reactions of Abrams do not exist—at least objectively. They are merely products of the Abrams practitioner's mind. These so-called reactions are without diagnostic value. And the Abrams oscilloclast intended to restore the proper electronic conditions in the diseased or ailing body, is barren of real therapeutic value. The entire Abrams electronic technique is not worthy of serious attention in any of its numerous variations. At best, it is all an illusion. At worst, it is a colossal fraud."

The closing article then sketches the long months of work done by the investigating committee and summarizes its findings thus:

"It is the belief of this Committee, based on its observations and experimentation that the so-called electronic reactions do not exist. They are either faked by the unscrupulous practitioner, or, when the practitioner is sincere, they are baffling products of his subconscious mind. This Committee does not believe that a blood specimen gives off energy, electronic or otherwise, that can be led through wires and detected by means of abdominal reflexes. This Committee does not believe for a moment that any electronic worker can identify similar blood specimens from among miscellaneous blood specimens. All these things cannot be done under cold, clean-cut scientific test conditions. Whatever has been done in everyday practice and under tests conducted by the electronists themselves, has no value in our deliberations."

"This electronic technique has been conceived by a master mind. It is far more intricate and ironclad than medical fads of the past. It deals with a new form of energy which, we are told, cannot be detected by the physicist's most delicate instruments, but can be detected by the abdominal reflexes under the guidance of an electronic diagnostician. These reactions are said to be affected by the presence of skeptical minds, radio broadcasting waves, steel work in buildings, weather, and so on. The conditions are said to be so delicate that diagnostic failures can always be laid to the contamination of the blood specimen through ordinary handling. The reactions come and go for no apparent reason and at the crucial moment of a test the reactions usually fail entirely because the reagent is exhausted electronically speaking. But in everyday practice the electronic reactions apparently work without a hitch."

The orthodox doctor cannot follow very far in the electronic deliberations. He is out of his element if he does. Should he produce a patient with tuberculosis in the last

¹ We are advised that the *Scientific American* will condense the series of articles on the Electronic Reactions of Abrams and publish it with the Committee's verdict in pamphlet form. The pamphlet which will sell for 10 cents can be obtained from the *Scientific American* Publishing Company, 233 Broadway, New York City.

stages, and the electronic blood examination pronounces the patient to be dying of cancer the correct answer is cancer and not tuberculosis. The electronic answer, of course, is the correct one, always. Hence the doctor is simply out of his element.

The electrical engineer and the radio engineer find themselves at sea when investigating the apparatus. True, it utterly fails to make sense on the basis of electrical or radio reasoning, but then this is not electricity or radio waves—it is electronic. Thus the electronic field is again barred to others.

Thousands of doctors and near-doctors have entered the electronic fold. They have gone about their work of diagnosing and treating that part of the public which seeks something new in medicine as well as in clothes and automobiles. So-called radio men have found lucrative employment in working for electronists as 'engineers.' Many a small manufacturer has found a profitable field in turning out all manner of pseudo-radio devices called electronic diagnosis and treatment apparatus. And all of this activity comes right down to the so-called electronic reactions of Abrams, which, according to this Committee, do not exist.

Meanwhile this electronic development has caused a sad state of affairs in this world of ours. It has given rise to all sorts of occultism in medicine. It has been a renaissance of the black magic of medieval times. It has given free reign to idiotic ideas—ideas which would formerly have been laughed out of existence at their very start. Suffering humanity has been made so many lavish promises of late that it is a sad disillusion now to go back to our conservative orthodox medicine, which, after all, remains our mainstay.

"So much for Buckingham." The *Scientific American* has done a good job and a public service. To some it may seem to have been a tremendous waste of valuable time and high class energy. In a gullible world however, it often becomes necessary to prove by the methods of a Euclidean Q. E. D. the supposedly patent fact that the moon is not and never was made of green cheese.

Correspondence

"RATE OF PROGRESS OF FOOD RESIDUES THROUGH THE BOWEL"

To the Editor—The extremely valuable article by Drs Alvarez and Freedlander entitled "The Rate of Progress of Food Residues Through the Bowel" (THE JOURNAL August 23) contains an erroneous statement of fact, and it is on this statement that their experimental work was based.

They state that "every physician and layman is satisfied that the rate of progress of food through the bowel takes normally from twenty-four to forty eight hours. Every roentgenologist knows that most of the barium leaves the body within twenty-four hours and that only traces can be seen after forty eight hours." To disprove this statement they undertook a long and laborious work.

Various methods and routines of technic are employed by roentgenologists in the examination of the gastro intestinal tract. The most widespread practice is to give a strong purgative the evening before commencement of the examination and some even go so far as to require purgatives on the two previous days.

As a result of this "preparation" for the barium meal examination, the entire gastro-intestinal tract is markedly irritated and the colonic contents are discharged much more quickly than normal. The object is to empty the intestines thoroughly before the barium-meal examination is made. The effect of the purgative lasts longer than is commonly supposed. It always is strongly active on the bowel during the first day of roentgen-ray examination, and at six hours after ingestion of the meal it is not at all uncommon to find the barium already in the sigmoid colon or even in the rectum.

One would suppose that the effect of the purgative would wear off after twenty-four hours, but such is not the case.

Even on the second day of roentgen-ray examination (the forty-eight hour examination) the effects are still noticeable in the large bowel, and practically always the colon is empty at this time or nearly so as Drs Alvarez and Freedlander state. It is quite evident, therefore, that the "physiology" which their experimental work undertook to refute was based on erroneous information from roentgenologists. The normal bowel did not empty itself in the twenty-four or forty-eight hours, it was the irritated bowel following a drastic purgative.

The routine that I and a minority of other roentgenologists follow is to give absolutely no purgative for at least forty-eight hours previous to gastro-intestinal study. We then find an entirely different state of affairs. The stomach normally empties in six hours, and at this time the head of the meal is in the cecum or the ascending colon, while the tail of the meal is in the terminal portion of the ileum.

Then we find that, twenty-four hours after ingestion of the meal the barium extends from the rectum to the cecum, with the small bowel clear. There may or may not have been a bowel movement in the meantime.

Then at forty-eight hours after ingestion of the meal we expect to find the meal extending from the rectum to either the cecum or the ascending colon, sometimes the hepatic flexure. Finally, at the seventy-two hour examination we find the large bowel either entirely empty, or a few specks of barium strung out in the last half of the colon. It is quite evident therefore that the above-named investigators started out to disprove something that did not exist. We usually expect the large bowel to empty or practically empty in from forty-eight to seventy-two hours. The dye and charcoal tests give practically the same results.

Now in regard to the stasis which was found in some individuals of from one to several weeks, it is admitted by them that the second and third beads moved faster than the first. This is anomalous, and requires explanation before it can be accepted as a normal occurrence.

Not infrequently in roentgen-ray examinations, a small amount of barium is seen to be held up in the cecum for varying lengths of time. This small mass of barium slowly gives off small portions of itself so that there is fine, flaky barium strung out in the large bowel, with a heavier mass in the tip of the cecum. I have observed this cecal stasis to last from a week to ten days and even then be removed entirely only by a purgative. Ordinarily, however, the physician expects his patient back in two or three days and the cecal stasis is not followed to the end.

This cecal stasis is not at all unfamiliar to roentgenologists. Some have tried to explain it by the presence of pericecal adhesions following appendectomy. But it is seen both in those who have had their appendix removed and in those who still have their appendixes, it is seen with the normal appendix as well as with chronic appendicitis.

To summarize therefore, roentgenologists find that the rate of discharge for a normal meal from a normal gastro intestinal tract is from forty-eight to seventy two hours, that is from two to three days after ingestion of the meal. Anything less than forty eight hours is hypermotility, and anything more than seventy-two hours is constipation.

MORRIS I. BIERNAN, M.D., Washington, D. C.

[The letter of Dr. Bierman was referred to Dr. Alvarez, who replies.]

To the Editor—Dr. Bierman first accuses Dr. Freedlander and me of tilting at windmills and then admits that the windmills are grants to the majority of roentgenologists. Since the "minority" led by himself have obtained results that are somewhat similar to ours he feels that we have wasted our time. Actually, we did not start out to refute anything—we were simply trying, with the help of a new technic, to get

more exact quantitative data in regard to the passage of food residues through the bowel. The truth of the matter is that the results of the first series of experiments in 1913 were so different from what I had been taught to expect that I did not have the courage to publish anything until three men and women working independently of one another in my laboratory had obtained the same figures.

Now as to the statement that Dr Freedlander and I are misinformed about the literature. Our use of the term "every" may have been rather sweeping, but after spending weeks in the library, my co-worker came to the conclusion that Burnett was the only one whose results resembled ours. A bibliography was included in the first draft of our paper but as it did not seem to contribute much of value it disappeared during the boiling down process. Perhaps I may be permitted to quote from the first two authorities on our list, to give more weight than only repetition. Hurst (Constipation, etc., London, 1909, p. 12) says "If the bowels are opened once a day the interval between a meal and the excretion of its residue varies approximately between nine and thirty-two hours." Carman and Miller in their monograph (first edition, p. 442) say "Twenty-four to forty-eight hours is regarded by many roentgenologists as a fair time basis for the passage of bariumized food through the digestive tract."

There is something in what Dr Bierman says about the unwisdom of preliminary purgation when we wish to study a normal bowel. The first two books that I pick up from my desk, Carman and Miller, and Holmes and Ruggles, warn against it, and I thought it best to give it up in 1912 when I first began the use of the roentgenoscope in daily practice. Such preliminary purgation however cannot account for the discrepancy between our experimental results and those of the roentgenologists, because in my office where the patients are rarely purged, I see any number of men and women whose colons are practically empty in twenty-four hours and empty in forty-eight. Furthermore the older roentgenologists will remember that when barium was being substituted for bismuth many workers commented on the fact that the new drug went through the tract faster than did the old. It seemed to have a definite stimulating effect and we now know from the experiments in which barium and beads were given together that the drug often does accelerate the passage of material through the bowel.

WALTER C. ALVAREZ, M.D., San Francisco

"MEDICAL EDUCATION"

To the Editor—The editorial on medical education together with Pusey's published letter is so timely and to the point that in my opinion they deserve more than passing notice. While I personally believe that medicine is in a condition of "flux" that may ultimately mean what Rev. E. A. Hersh said at the Rush commencement about sixteen years ago when he stated that some day the doctor would again become the priest of the people and the present priests would step out, this evolution is no doubt a long way off. Meanwhile it is a condition and not a theory that confronts us. I believe that much could be done to change this condition for the better ideals for which the profession stands.

These things include more general practitioners, making dentistry a specialty of medicine, combining all the clinical material into a compact organization controlled and financed by the profession itself, taking postgraduate instruction out of the hands of private schools and putting it in the hands of the profession and financed by the profession as well as the public, making postgraduate instruction so that the weakest link in the chain could afford to keep constantly in touch with the newer methods, ideals and progress in medicine.

Finally, part of the dues for medical society organization should be devoted to financing such projects and building up centers for medical education and organization.

We need more elucidation from the leaders.

DANIEL S. HAGER, M.D., Los Angeles

SHALL THE PUBLIC TAKE FULL RESPONSIBILITY FOR SMALLPOX?

To the Editor—While attending a meeting of the Northwestern Medical Association held at Lovell, Wyo., September 4, I was impressed so fully by a remark made by Dr. Elvard Olson, secretary of the society, relative to the handling of the vaccination question that I feel called on to ask for a modest amount of space in *THE JOURNAL*, that Dr. Olson's idea may receive the publicity it deserves.

Dr. Olson stated that the nonquarantining of all smallpox cases would soon result in the universal adoption of vaccination. Vaccination either is or is not, a fallacy. If vaccination is efficient, quarantine is unnecessary. Dr. Olson argued that if all smallpox cases were unquarantined, and that if all citizens were given to understand that such conditions existed, and also that the positive protection against the disease, i.e., vaccination was offered, and that "whosoever will may come," that the matter of "compulsion" as to vaccination would no longer furnish an "arguing point" in the minds of the antivaccinationists.

As smallpox would be an impossible thing in a community where all were vaccinated and further because it falls on the unvaccinated to perpetuate the disease, community welfare would soon cause persons to ask for the protection afforded by vaccination. Mr. Citizen, himself, would fight the battle for a clean community and the physician would be relieved of much unpleasantness.

W. V. GAGE, M.D., Worland, Wyo.

"THE PRESCRIBING OF GLASSES" A DISCLAIMER

To the Editor—Mr. G. H. Aronsfeld of Galveston, Texas, has taken exception to a portion of my address before the Section on Ophthalmology of the American Medical Association (*THE JOURNAL*, July 26) in which I referred to an article in *Wellsworth*, October 1923 depicting as good salesmanship a sale by Mr. Aronsfeld of expensive gold framed glasses to a patient who "looked to be an ordinary working man." I referred to this article as an example of the growing and unfortunate desire of a certain class of opticians to make sales of expensive glasses without regard to the needs and pocketbooks of their patients. Mr. Aronsfeld tells me that the article was not written by him and was incorrect, and that the patient to whom he sold the glasses in question asked for the best glasses possible and was able to afford them. I, of course, had no knowledge of this and relied on the truth of the article. In the light of Mr. Aronsfeld's statement I feel that I owe him an apology.

GEORGE S. DERBY, M.D., Boston

AMYOTONIA CONGENITA

To the Editor—In *THE JOURNAL*, September 13, p. 842, Dr. Gerald R. Allaben reports two cases of amyotonia congenita occurring in the same family and states that the familial tendency has not been noted in the cases heretofore reported. This statement is erroneous. Not only have I reported two cases in brother and sister (*Arch. Pediat.* 38:303 [March] 1921) but several instances of familial occurrence are quoted in Faber's review of the subject (*Am. J. Dis. Child.* 13:395 [April] 1917).

JOSEPH POPPER, M.D., New York

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

MERCUROCHROME 220 SOLUBLE AND GENTIAN VIOLET INTRAVENOUSLY

To the Editor—Please give references to the treatment of septicemia and local infections by intravenous mercurochrome and gentian violet. 2 Give method of preparation for injection with reference as to whose products to use and to technic of administration. I have used two syringes, one syringe for salt solution to enter the vein and then a syringe charged with gentian violet. 3 What is the effect of gentian violet spilled subcutaneously? Is it similar to arsphenamin or salt solution? 4 Will gentian violet if injected intradermally be removed or remain as tattoo marks?

M D, Wash

ANSWER—1 The following is a list of references to articles on intravenous injection of mercurochrome 220 soluble and gentian violet in the treatment of septicemia and local infections.

- Young H H, White E C and Swartz, E O. A New Germicide for Use in Genito Urinary Tract 'Mercurochrome 220,' THE JOURNAL Nov 15 1919 p 1483.
Martin, W L. Use of Mercurochrome 220 in Infected Wounds U S Nav M Bull 16 718 719 (April) 1922.
Young H H, White E C, and Swartz E O. Further Clinical Studies on Use of Mercurochrome as a General Germicide THE JOURNAL, July 9, 1921 p 93.
Young H H, and Hill J H. Treatment of Septicemia and Local Infections by Intravenous Injections of Mercurochrome 220 Soluble and Gentian Violet, THE JOURNAL, March 1 1924 p 669.
Smith D T, and Casparis, Horton. Gentian Violet in Staphylococcus Septicemia THE JOURNAL Dec 29 1923 p 2184.
Churchman J W. Effect of Slight Increase of Temperature on Bacteriostatic Power of Gentian Violet Bull Johns Hopkins Hosp 33 227 229 (June) 1922.
Churchman J W. Further Studies on Behavior of Bacteria Toward Gentian Violet J Exper Med 33 569 (May) 1921.
Churchman J W. Sterilization of Closed Cavities by Lavage and Staining with Gentian Violet THE JOURNAL July 2 1921 p 24.
Churchman, J W. Selective Bacteriostasis in Treatment of Infections with Gentian Violet THE JOURNAL Jan 17 1920 p 145.
Young H H and Birkhaug Konrad. Cure of Scarlet Fever Complicated with Erysipelas and Streptococcus Septicemia by Intravenous Injection of Mercurochrome 220 Soluble THE JOURNAL Aug 16 1924 p 492.
Churchman, J W. Selective Bacteriostatic Action of Gentian Violet and Other Dyes J Urol 11 1 (Jan) 1924.

2 Mercurochrome 220 soluble and gentian violet, when administered intravenously, are used in recently prepared aqueous solution. Of mercurochrome, 5 mg per kilogram of body weight appears to be generally used. This dosage is administered in a 1 per cent solution freshly prepared from recently distilled water and filtered before using. Of gentian violet, Hill and Young used 0.25 per cent aqueous solution, the dose being 5 mg per kilogram of body weight. Mercurochrome-220 soluble, marketed by Hynson Westcott & Dunning, Baltimore, has been accepted for New and Nonofficial Remedies. Gentian violet medicinal—"National" of the National Aniline & Chemical Company, New York, and gentian violet improved medicinal, marketed by Coleman & Bell Company, Norwood, Ohio, have been accepted for New and Nonofficial Remedies (THE JOURNAL, Sept 6, 1924, p 767).

3 Gentian violet solution when "spilled subcutaneously" will not produce the extensive induration, etc., produced by arsphenamin.

4 It will not remain permanently in the tissues.

HECTINE

To the Editor—I have read an article on blood filariasis and its treatment by subcutaneous injections of hectine by Tanon and Giraud and being unable to locate any source of supply of this preparation I will be greatly obliged to you if you will furnish me with any information concerning it that you may have. I have a case of filariasis with an elephantiasis of the right leg and having tried many things without any benefit I am extremely anxious to find some remedy for the condition.

CHARLES Z Candler, M D, SYLVIA, N C.

ANSWER—"Hectine" is said to be sodium benzosulpho-aminophenyl-arsenate and therefore is similar in composition to the product "atoxyl." Atoxyl is one of a class of arsenical preparations, the use of which has been generally discontinued in favor of the products of the arsphenamin type (THE JOURNAL, Feb 26 1921, p 595).

Hectine has not been accepted for New and Nonofficial Remedies, nor has the American agent, George J Wallau, Inc., requested such recognition by the Council.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ARIZONA Phoenix, Oct 7 8 Sec, Dr W O Sweek 404 Heard Bldg, Phoenix.
CALIFORNIA Sacramento Oct 20 23 Sec, Dr Charles B Pinkham 908 Forum Bldg, Sacramento.
DISTRICT OF COLUMBIA Washington, Oct 14 Sec Dr Edgar P Copeland Stoneleigh Court Washington.
FLORIDA Tallahassee, Oct 14 15 Sec, Dr Wm Rowlett Citizens Bank Bldg, Tampa.
GEORGIA Atlanta, Oct 14 16 Sec Dr C T Nolan, Marietta.
HAWAII Honolulu, Oct 13 16 Sec Dr G C Milnor, 401 So Beretania St Honolulu.
IDAHO Boise Oct 7 Dir Mr Chris Laurensen Boise.
ILLINOIS Chicago Oct 7 9 Supt of Regis Mr V C Michels, Springfield.
IOWA Des Moines, Oct 13 Sec, Dr Rodney P Fagen, Capitol Bldg, Des Moines.
KANSAS Topeka Oct 14 Sec Dr Albert S Ross Sabetha.
MICHIGAN Lansing Oct 14 16 Sec Dr B D Harrison, 707 8 Stroh Bldg Detroit.
MINNESOTA Minneapolis Oct 7 9 Sec, Dr Thos McDavitt, 539 Lowry Bldg St Paul.
MONTANA Helena, Oct 7 Sec Dr S A Cooney, Power Bldg Helena.
NEW JERSEY Trenton Oct 21 22 Sec Dr Alex Macalister, State House Trenton.
NEW MEXICO Santa Fe Oct 13 14 Sec Dr W T Joyner Roswell.
OKLAHOMA Oklahoma City Oct 14 15 Sec Dr J M Byrum Shawnee.
RHODE ISLAND Providence Oct 23 Sec Dr B U Richard State House Providence.
UTAH Salt Lake City Oct 7 Sec Mr J T Hammand 412 State Capitol Bldg Salt Lake City.
WEST VIRGINIA Charleston Oct 28 Sec Dr W T Henshaw, Charleston.
WYOMING Cheyenne, Oct 6 8 Sec Dr J D Shingle 226 Citizens Bank Bldg Cheyenne.

Kansas June Examination

Dr A S Ross, secretary, Kansas Board of Medical Registration and Examination reports the written examination held at Topeka June 17-18, 1924. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Twenty eight candidates were examined, all of whom passed. Eleven candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad	Per Cent
Loyola University		(1924)	91.3
University of Kansas	(1924) 22	85.6	86.8
	88.7 88.7 89.3 89.6 90.3 90.4 90.4 90.5 90.6, 90.8 90.9 91.4 91.8 91.9 92.2 93.2 94.3		
University Medical College of Kansas City		(1900)	89.8
Syracuse University		(1918)	91.3
Meharry Medical College	(1921) 80.7,	(1923)	76.8
McGill University Faculty of Medicine		(1923)	88.2

College	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
George Washington University	(1912)	Dist Colum	
Bennett Medical College	(1912)	Nebraska	
Chicago College of Medicine and Surgery	(1914)	Illinois	
Loyola University	(1916)	Illinois	
State University of Iowa College of Medicine	(1904)	Iowa	
University of Minnesota	(1924)	Minnesota	
Creighton Medical College	(1923) 3	Nebraska	
University of Nebraska	(1921)	Nebraska	
Meharry Medical College	(1913)	Tennessee	

Iowa May Examination

Dr Rodney P Fagen, secretary, Iowa Board of Medical Examiners, reports the written examination held at Iowa City, May 29-31, 1924. The examination covered 8 subjects and included 100 questions. An average of 75 per cent was required to pass. Fifty-four candidates were examined all of whom passed. Twenty-four candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad	Per Cent
Northwestern University Medical School		(1924)	89.8
State University of Iowa College of Medicine	(1924, 47)	87.6	87.8
	88 88.3 88.3 88.6 88.6 88.9 88.9 89.1 89.1 89.4 89.5 89.6 89.6 89.6 89.6 89.6 89.8 89.8 89.9 89.9 89.9 90 90 90.1 90.1 90.3 90.3 90.3 90.3 90.4 90.4 90.4 90.5 90.5 90.6 90.6 91 91.4 91.4 91.4 91.9		
Tufts College Medical School	(1921)	88.4	
St Louis University School of Medicine	(1924)	89	
University of Jena Germany	(1921)	88.3	
University of Wurzburg Germany	(1922)	88.6	
University of Cluj Roumania	(1920)	87.3	

College	INCREASED BY RECIPROCITY	Year Grad	Reciprocity with
University of Arkansas		(1916)	Arkansas
College of Medical Evangelists	(1916),	(1919)	California
Dartmouth Medical College		(1907)	Illinois
Loyola University		(1916)	Illinois
Northwestern University		(1924)	Illinois
Rush Medical College		(1903)	Illinois
University of Illinois College of Medicine		(1921, 2)	Illinois
Harvard University		(1921)	Illinois
University of Minnesota		(1924)	Minnesota
Creighton Medical College	(1900) (1902)	(1923, 6)	Nebraska
University of Nebraska		(1923)	Nebraska
Jefferson Medical College		(1911)	Penn.
University of Pennsylvania		(1907)	Illinois
Meharry Medical College		(1918)	Tennessee
University of Naples Italy		(1898)	Mississippi
Graduation not verified			

Book Notices

DIFFERENTIAL DIAGNOSIS Presented Through an Analysis of 317 Cases By Richard C Cabot M.D. Professor of Medicine and Professor of Social Ethics at Harvard University. Volume II. Third edition. Cloth Price \$9 net Pp 709, with 254 illustrations. Philadelphia: W B Saunders Company, 1924.

The method of presentation is a practical one. The book considers separately nineteen symptoms, such as abdominal and other tumors, vertigo and diarrhea. Each is given a general survey, followed by numerous illustrative case reports. The survey classes the main causes of a symptom, the relative frequency with which each is met, and the leading corroborative signs and symptoms. The cases presented are carefully selected. Each case history is given, followed by the results of physical examination and laboratory tests. The discussion presents the possible diagnosis, and the factor or factors that eliminate some of them. The final conclusion is based on operation, necropsy or the future course of the patient. The case method gives a sound and valuable although bulky, presentation of differential diagnosis. Its value would be greatly enhanced by a full and logical index, which is unfortunately lacking in this book.

ORGANIC ARSENICAL COMPOUNDS By George W Raiziss Ph.D. Professor of Chemotherapy Graduate School of Medicine University of Pennsylvania and Joseph L Gavron B.S. Associate in Research Chemistry Dermatological Research Laboratories. Cloth Price \$7 net Pp 570. New York: The Chemical Catalog Company 1923.

This is another contribution to the excellent series of monographs written under the direction of the American Chemical Society. The authors have had wide experience in the preparation of arsenicals, and much influence in establishing confidence in American-made arsphenamin, particularly in the trying days of the German embargo on "Salvarsan." The number of known organic arsenic compounds extends into the thousands, yet not more than one occurs in Nature, the remainder are the results of the ingenuity of the chemist. Probably there is no other element that has been the subject of more extensive chemical, biologic and chemotherapeutic investigations. In fact this one branch of chemistry has developed at such a rate in the last ten years that there has been great need for an authoritative treatise on the arsenicals. And such a book has been ably written by Raiziss and Gavron. The compounds are described clearly, yet concisely. Structural formulas abound, which means, of course, that the proof-reading has been most careful. The authors have discussed in a well balanced manner the therapeutic relationship of arsenicals and concomitant impurities. The chapter on the chemotherapy of organic arsenicals will appeal to investigators in syphilology and dermatology. To illustrate its value as a reference book, it may be pointed out that there are 1,594 references to the literature.

THE EVOLUTION OF MAN Essays By G Elliot Smith M.A. M.D. Litt D. Cloth Price \$2.85 Pp 159 with 19 illustrations. New York: Oxford University Press 1924.

In this volume are included three lectures delivered by the noted British physician and anthropologist before leading British scientific organizations. Dr Smith had much to do with the study of the famous Rhodesian skull discovered in 1921, the remarkable tooth found in Nebraska in 1922 and

many other recent anthropologic discoveries. He constructs a family tree which places the Nordic race at the apex of man's evolution. Of this evolution from the apes he says, "To deny the validity of this evidence of near kinship is tantamount to a confession of the utter uselessness of the facts of comparative anatomy as indications of genetic relationships and a reversion to the obscurantism of the dark ages of biology." Among the apes the gorilla and chimpanzee are placed as the common ancestors of man. The argument of Dr Smith aims to demonstrate that it is the steady growth and specialization of the brain that has been the fundamental factor in leading man's ancestors upward from the lowly insectivore status. Having completed his discussion of evolution the author considers primitive man and the differences between the Neanderthal the Piltdown, the Rhodesian and the other primitive types thus far identified. He traces beautifully the gradual transition from the animal to man the development of the brain, the ability to use the knowledge of the community and of the environment, the domestication of animals and finally, cultivation of the soil. This leads at last to the conclusion that "throughout the course of human history man's attitude has been determined not by the alteration of the structure of the mind but by the intellectual and moral influences which have been impressed on each individual's mind by the community in which he lived." The fact that his skull was long or broad or his hair blond or dark or the matter of his ancestry whether he belonged to the Alpine the Nordic or the Mediterranean races, would count for little in this process in comparison with the potent molding force of the atmosphere of the family and the society in which he grew up during the years of his mental plasticity. The final lecture deals with the human brain of the varying conceptions held by man, and of the development of the function of this organ since the earliest times.

HANDBUCH DER EXPERIMENTELLEN PHARMAKOLOGIE Herausgegeben von A Heffter Professor der Pharmakologie an der Universität Berlin. Erster Band. Kohlenoxyd Kohlensäure Stickstoffoxydul, Narkotica der Aliphatischen Reihe Ammoniak und Ammoniumsalze Ammoniakderivate Aliphatische Amine und Amide Aminosäuren Quartäre Ammoniumverbindungen und Körper mit Verwandter Wirkung Muscaringruppe Guanidingruppe, Cyanwasserstoff Nitriglycoside Nitrile Rhodanwasserstoff Isocyanide Nitritgruppe Toxische Säuren der Aliphatischen Reihe Aromatische Kohlenwasserstoffe Aromatische Monamine Diamine der Benzolfreihe, Pyrazolomabkommlinge Camphergruppe, Organische Farbstoffe. Paper Price \$11.20 Pp 1296 with 129 illustrations. Berlin: Julius Springer 1923.

According to the title-page the "Handbuch" contains contributions from leading pharmacologists of the world. The first volume—which is the only one available—contains chapters written by fourteen men, including Reid Hunt of this country. The work is to be issued in three volumes, each containing more than a thousand pages. The first volume deals with such subjects as carbon monoxid carbon dioxide inhalation anesthesia, alcohol, narcotics and hypnotics the guanidin group, nitrate group, and various diamines. It is indeed a book for the laboratory pharmacologist or research therapist—references abound and the material is of relatively recent date. The constitution chemical and physical properties, the toxicologic influence on various organs, and the clinical application is the general order in which the substances are discussed. While it is not intended as a critical work suitable as a textbook it promises to be a most valuable reference book in this ever increasing field of knowledge.

WHAT DOES YOUR CHILD WEIGH? By Edith B Lowry M.D. Cloth Price \$1.25 Pp 187. Chicago: Forbes & Company 1924.

Here is another presentation of the familiar Wood tables of height and weight the classifications of bad health habits and bad diet and a rather uninspired routine discussion of methods for improvement. The volume concludes with an announcement of a camp in which the author gives personal attention to children. While the advice contained in the book is sound it is not especially well presented or in such form as to appeal particularly to the public especially at a time when many altruistic agencies are issuing similar material in more attractive form.

Medicolegal

Fees Payable by Third Party

(Gardner v Myers (Mo) 299 S W R 150)

The Kansas City (Mo) Court of Appeals, in affirming a judgment against the defendant covering items amounting to \$623.40 for surgical, medical and hospital services rendered by the plaintiff to one Ritter, says that Ritter was the defendant's superintendent at a factory of which the defendant was manager and one of the owners. Ritter, while riding in an automobile, was injured at a railroad crossing. The plaintiff received an urgency call, went to the crossing, and immediately took Ritter to his (the plaintiff's) hospital. Later in the same day the defendant went to the plaintiff's home inquired about Ritter's condition, and told the plaintiff to take care of the case and to charge it to him (the defendant). After Ritter was discharged from the hospital, and the plaintiff asked the defendant for the payment of the bill, the defendant requested the plaintiff to make out his bill to Ritter and leave it with the latter, and the defendant would make an arrangement with Ritter whereby he would place the money in the bank to Ritter's credit and then Ritter could write his own check, as, the defendant said, "It will keep our books straighter." Plaintiff's reply was that it would make no difference to him, just so he got his money. Accordingly, the plaintiff made out the bill in Ritter's name and took it to him. About a week later, the defendant told the plaintiff that he had mentioned the matter to Ritter, but that Ritter had given him to understand that he would take care of his own business. The plaintiff then said to the defendant, "I am looking to you for this," to which the defendant replied, "I will do the best I can." The plaintiff testified that he never looked to Ritter for the payment of the bill but to the defendant, who had authorized it and that the only person he ever made out a bill in Ritter's name and took it to him was that the defendant had requested him to do so.

The evidentiary facts in support of the plaintiff's case did not make of it one wherein one man orally tells another to render services to a third (to whom the first owes no obligation), and, if the one receiving the benefit of the services does not pay the bill he will. It was a case in which the jury could reasonably find that the defendant expressly directed the plaintiff physician to do everything necessary to be done for the injured man, and to charge the bill to the defendant. In other words, the defendant directed the services to be rendered and agreed to pay for them and the plaintiff had good reason to understand it in that light. Furthermore, the evidence tended to show that the defendant was pecuniarily interested in having the man well cared for, and hence the latter was not a stranger sustaining no relation whatever to the defendant. This is not stated as constituting of itself, a ground of liability, but as affording reasonableness to the contention that the defendant agreed to pay for the services, and that the plaintiff understood it that way, and intended at the time to look to the defendant for such pay.

The promise or contract to pay relied on occurred before the services were rendered, unless it could be said that the taking of the patient to the hospital and the first act of emergency treatment given him occurred before the contract. However, as this would be so infinitesimal when compared to the rest of the services, and as there was room for believing that the defendant was pecuniarily interested in having him cared for and wanted that done, there was no reason for any distinction on that ground.

Because the plaintiff's account book was not formally introduced in evidence, it could not be said that there was no evidence on which to base a verdict. There was evidence that the items in the account were rendered, that they were charged to the defendant, and were reasonable. No objection was made to the nonintroduction of the account book in evidence, nor was there any objection made to the evidence in support of the account on that ground. Again, since there was evidence that the charges for the items in the account were reasonable, there was no basis for the contention that

there was no evidence of the reasonable value of the roentgenograms or of the surgical dressings, and that consequently the verdict was excessive.

If there was a contract on the defendant's part to pay for the services, it was not necessary for the plaintiff otherwise to "protect himself for the payment" thereof, or "to notify the defendant that he would charge him" therefor, as it was sought to have the jury instructed that he should have done. A rehearing was denied the defendant.

Unlawful Transportation of Narcotics by Physicians

(Stout v State (Okla), 224 Pac R 375)

The Criminal Court of Appeals of Oklahoma, in affirming a judgment of conviction of defendant Stout of illegally transporting narcotic drugs, says that his punishment was fixed at confinement in the penitentiary for a term of three years and a fine of \$1000. The prosecution was predicated on Section 8887 of the Compiled Statutes of Oklahoma of 1921. In this appeal the judgment of the trial court was attacked from several angles, all of which, however, related to the defendant's contention that under the provisions of this narcotic drug law a physician is authorized to transport narcotics and that for this reason the information and the proof supporting it were insufficient. But this statute was designed to prohibit the unauthorized sale, introduction and transportation of narcotic drugs, it applies to physicians as well as others, excepting only in cases in which the use of narcotic drugs is necessary in the treatment of disease, and then only in such quantities and in such manner as designated in the statute. The fact that the accused is a physician will not make him immune from punishment under the penal provisions of the statute in cases in which he knowingly participated in the unauthorized traffic in narcotics. This statute is within the police power of the state designed as it is to discourage and suppress both the open and the insidious use of narcotics—a growing evil which tends to undermine the health and morals of individuals and which has become a serious menace to the welfare of the state. To curb the cupidity of depraved persons including physicians who traffic in the lives and morals of others the state has prescribed severe penalties, and the grave consequences of this evil justify the drastic penalties found in the statute. The judgment in this case may seem severe, but one of the purposes in punishing lawbreakers is to deter others from committing the same offense. With that purpose in mind, this court will refuse to exercise its right to mitigate the punishment assessed in this case.

Society Proceedings

COMING MEETINGS

American Association of Railway Surgeons Chicago Oct 15 17 Dr Louis J Mitchell 29 East Madison Street Chicago Secretary
American Child Health Association Kansas City Mo, Oct 15 17 Dr Philip Van Ingen 125 East 71st Street New York Secretary
American College of Radiology and Physiotherapy Chicago Nov 12 14 Dr Roy W. Fouts, 121 South 33d Street Omaha Secretary
American College of Surgeons New York Oct 20 24 Dr Franklin H. Martin 40 East Erie Street, Chicago Director General
American Public Health Association Detroit Oct 20 23 Mr Homer N. Calver 370 Seventh Avenue New York, Secretary
Association of Military Surgeons of the United States, San Antonio Tex Nov 13 15 Major E. E. Hume, M. C., U. S. A., Army Medical Library Washington D. C.
Central States Pediatric Society Rochester Minneapolis, Oct 30 31 Dr H. T. Price Westinghouse Building Pittsburgh Secretary
Colorado State Medical Society, Denver, Oct 7 9 Dr F. B. Stephenson Metropolitan Building, Denver Secretary
Delaware State Medical Society, Milford Oct 14 15 Dr W. O. LaMotte Industrial Trust Building Wilmington Secretary
Indiana State Medical Association Indianapolis Sept 24 26 Dr Charles N. Combs 221 South 6th Street Terre Haute Secretary
Interstate Post Graduate Assembly of America Milwaukee Oct 27 31 Dr W. B. Peck 82 Stephenson St, Freeport Ill Managing Director
Kentucky State Medical Association Louisville Sept 23 25 Dr A. T. McCormack 532 West Main Street Louisville Secretary
Medical Association of the Southwest Kansas City Mo Oct 13 18 Dr E. H. Skinner Rialto Building Kansas City Mo Secretary
Minnesota State Medical Association St Cloud Oct 8 10 Dr Carl B. Drake Guardian Life Building St Paul Secretary
Pennsylvania Medical Society of the State of Reading Oct 6 9 Dr W. P. Donaldson Jenkins Arcade, Pittsburgh, Secretary
Vermont State Medical Society Burlington Oct 9 10 Dr W. G. Ricker St. Johnsbury Secretary
Virginia Medical Society of Staunton Oct 14 17 Miss Agnes V. Edwards, 104 1/2 West Grace Street Richmond Secretary

Current Medical Literature

AMERICAN

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Titles marked with an (*) are abstracted below

American Journal of Diseases of Children, Chicago

28 133-64 (Aug.) 1924

- Congenital Syphilis I Lindlay Glasgow Scotland—p 133
Lange Gold Chlorid Reaction on Cerebrospinal Fluid in Infants and Young Children C G Grulee Chicago—p 147
Studies in Growth III In Untreated Mongolian Idiots I B Talbot Boston—p 152
Prognosis of Sequelae of Epidemic Encephalitis in Children R I J Kennedy Rochester Minn—p 158
Effect of Pregnancy on Scurvy in Guinea Pigs II J Gerstenberger, W M Champion, and D N Smith Cleveland—p 173
Foreign Bodies in Air and Food Passages of Infants and Children R S Kowland Detroit—p 183
Transposition of Abdominal Viscera F Shaw and H K Blake Boston—p 204
Brain Abscess M G Peterman Rochester Minn—p 208
Icterus Gravis of New Born Three Cases P Klempner New York—p 212

Notification of Congenital Syphilis—Experience in the treatment of congenital syphilis has convinced Findlay that the hope for its eradication lies in prophylaxis. But that such treatment can be carried out as extensively as is required necessitates the notification of syphilis, or at least the notification of congenital syphilis.

Colloidal Gold Reaction in Congenital Syphilis—Grulee finds that in congenital syphilis, the colloidal gold reaction in the spinal fluid may assume at times the same degree as that shown in cases of parietic dementia. In this series, this occurred twice in cases of syphilitic meningitis. Congenital syphilis varies rather frequently from the usual reaction, that is, a fluid which shows the greatest reaction in dilutions of 1:40 and 1:80. There is no regular agreement between the blood Wassermann and the Wassermann and colloidal gold reactions in the spinal fluid. There may be a strong reaction both to the Wassermann and to the colloidal gold solution in the spinal fluid with a negative blood Wassermann. Tuberculous meningitis more nearly conforms to the reaction with greatest intensity in dilutions of 1:160 and 1:320. It may, however, vary considerably from this in certain cases showing a progressive variation as the meningitis extends. Other conditions which clinically may be easily confused with tuberculous meningitis may show a colloidal gold reaction not dissimilar from that which is seen in certain cases of tuberculous meningitis. There is no definite reaction in most cases of idiocy and epilepsy.

End-Results of Epidemic Encephalitis in Children—Sixty-one cases of residual epidemic encephalitis in children under 14 years of age were studied by Kennedy. Fifty-two of the patients were traced from the time of their first visit until the present. Twenty-one sixteen of whom were traced, presented the parkinsonian syndrome. None was improved, the condition of two was stationary, and of fourteen worse. One died from an intercurrent infection. The prognosis in this condition is not bad as regards life, but poor as regards improvement or recovery. Twenty-three had changes in behavior and personality. Six were improved, and seventeen showed no improvement or had become worse. The lack of restraint exhibited by these children does not necessarily imply any great degree of mental impairment. Nineteen presented disturbances of sleep. Nine of these are now sleeping practically normally, three still show more or less disturbance and seven are the same or worse. The respiratory syndrome occurred in this series much more commonly than is indicated by the literature. Two of seventeen children who had this sequela are well, three are apparently improving and the condition of twelve is unchanged. In none has the condition become worse.

Transposition of Heart Ventricles—Interest in the case cited by Shaw and Blake centers chiefly in the occurrence

of a transposition of the ventricles in a left sided heart. It is of some practical importance that the occurrence or tympany in the right axilla over the area of normal liver dulness quickly led to the clinical diagnosis. Tympany in this location can mean only transposed liver or the presence of gas between liver and diaphragm. The latter was readily ruled out and the association of dulness in the left axilla quickly led to the correct diagnosis.

Brain Abscess—The case reported by Peterman illustrates the difficulty encountered in the diagnosis of intracranial lesions. There was so little to suggest an abscess that the possibility of it was not considered in reaching a diagnosis. The abscess was situated in the left frontal lobe. The symptoms began when a second smaller abscess formed, by extension from the initial lesion, and reached the surface. The differential diagnosis in this case included tuberculous meningitis, brain tumor and brain abscess. Brain abscess was not considered because there was no history of a previous infection of the skin, nose, throat, ears or gastro-intestinal canal, there were no localizing symptoms, the lesion being located in the 'silent area', the increased cell count of the spinal fluid consisted mainly of lymphocytes. The positive tuberculin reaction, the history of phlyctenular conjunctivitis, the insidious onset, without antecedent acute infection, all point to a tuberculous involvement of the meninges, or to a possible tuberculoma. Clinically a new growth could not be excluded. It was therefore rather a surprise at necropsy to find that the symptoms had been due to a staphylococcal abscess and not to a tuberculoma or cerebral neoplasm.

American Journal of Roentgenology and Radium Therapy, New York

12 196 (July) 1924

- Changes in Articular Surfaces in Tuberculous and in Pyogenic Infections of Joints D B Phemister Chicago—p 1
*Lack of Positive Roentgen Ray Findings in Low Back Pain P B Magnuson Chicago—p 15
*Roentgen Ray Studies of Feeble-minded M W Clift Detroit—p 23
*Hepatic Lesions in Patients Treated by Intensive Deep Roentgen Ray Irradiation J T Case Battle Creek Mich and A S Warthin Ann Arbor Mich—p 27
Relation of Blood Groups to Malignant Disease and Influence of Radiotherapy G E Pfahler and B P Widmann Philadelphia—p 47
*Untoward Results in Radiation Therapy of Uterine Cancer When Complicated with Latent Gonococcal Salpingitis B F Schreiner and L C Kress Buffalo—p 51
Mixed Radiation in Malignant Disease D I Keith Louisville Ky—p 53
Inverse Square of Distance Law for Filtered Roentgen Ray Radiation C M MacKee and G C Andrews New York—p 58
Future Relations of Dental and Medical Professions B C Darling New York—p 67

Roentgenoscopy of Back Pain Cases—The relaxation of ligaments is primarily the cause of a large majority of acute and chronic back pains, infection, toxemia and trauma, combined with the anatomical variations in this region are responsible for acute back pains. Spondylolisthesis is a result of improper bony contact at the articulations or a loss of bony continuity in the neural arch of the fifth lumbar. In order to determine the cause of certain of these conditions Magnuson says, roentgenograms will have to be taken at various angles taking into consideration these anomalies before more definite information can be obtained on this subject.

Roentgenoscopy of Feeble-minded—The results of Clift's observations in the feeble-minded have yielded little on which to base a theory as to basic factors involved. The roentgen-ray examination of the feeble-minded shows a very high percentage of malformations and developmental defects of the skull and in those cases associated with endocrine disturbances there are well marked changes in the process of bone development and recognizable changes in the bony structure of the sella turcica are relatively uncommon even in those conditions in which the pituitary gland is involved.

Deep Roentgen-Ray Irradiation Causes Hepatic Lesions—Study of three cases leads Case and Warthin to believe that intensive deep roentgen-ray irradiation of the abdomen of a degree producing well marked roentgen sickness produces lesions not only in the gastro-intestinal mucosa but also in the epithelium of the biliary tract, particularly in the medium

and smaller sized bile ducts. Some injury to the liver cells at the periphery of the lobules is also produced, but the microscopic appearances of this are much less evident than those of the damage to the bile ducts. The liver cells appear to be more resistant to the irradiation than the bile duct epithelium. The disturbance of hepatic function after irradiation may be explained by the changes found in these cases. The hepatic as well as the gastro-intestinal injury must be considered as a possible factor in the production of roentgen-ray sickness.

Roentgenotherapy Intensifies Salpingitis—Schreiner and Kress have seen five cases in which there was lighting up of an old salpingitis by manipulation and insertion of radium into the uterus. They do not believe, however, that all cases of gonococcal infection complicating cancer of the uterus will cause such severe and disastrous results as are reported here.

Archives of Internal Medicine, Chicago

34 137 266 (Aug.) 1924

- *Mechanism of Angina Pectoris W D Reid Newton Mass—p 137
- *Laboratory Studies in Epilepsy I Fractional Gastric Analysis J Felsen New York—p 147
- *Cholesterol Content of Bile H L Bockus and J Eiman, Philadelphia—p 161
- *Vital Capacity of Lungs and Hyperthyroidism C A McKinlay, Minneapolis—p 168
- *Nasal Accessory Sinuses of Cardiopathies J W Miller New York—p 177
- *Blood Phosphorus in Cancer and Anemia T E Buckman, G R Minot G A Daland and M Weld Boston—p 181
- *Mesothelioma of Pleura I T Zeckwer Boston—p 191
- *Clinical Value of Serum Tetrachlorphenolphthalein Test for Liver Function R Ottenberg S Rosenfeld and L Goldsmith New York—p 206
- *Clinical Studies on Venous Pressure J A E Eyser and W S Middleton Madison Wis—p 228
- Regulation of Renal Activity IX Effect of Unilateral Nephrectomy on Function and Structure of Remaining Kidney T Addis B A Myers and J Oliver San Francisco—p 243
- Id \ Morphologic Study J Oliver San Francisco—p 258

Mechanism of Angina Pectoris—Evidence is given by Reid that in the circulatory adaptation to exercise there is a dilatation of the peripheral stream bed, and that this is brought about by the cooperation of the nervous system, probably by a reflex through the depressor nerve fibers of the vagus. This acts as a protective mechanism, as it permits the heart to contract without strain. A failure of this reflex dilatation of the peripheral arteries is suggested as the essential feature of angina pectoris. The sequence of events in angina pectoris may well be a failure of the reflex dilatation of the peripheral vessels, which leads to a sudden rise in the pressure in the first part of the aorta and the cavity of the left ventricle, this heightened pressure in turn irritates the local nerve end plates which respond by pain referred to the arm, shoulder, etc.

Gastric Symptoms in Epilepsy—The frequency of gastric symptoms in epilepsy occurring either as an aura or as a more or less continuous indescribable feeling of distress in the epigastric region prompted Felsen to make observations on fifty-three epileptics and thirty-seven other patients chosen at random as controls. Of the epilepsy group eight cases (15 per cent) showed complete absence of free hydrochloric acid in the fasting stomach, and for a period of two hours following the ingestion of a water test meal. Six others (11 per cent) showed similar results, except that the absence of free hydrochloric acid fell somewhat short of the two-hour period. Sixteen (30 per cent) showed absence or only slight traces of free acid in the first two or three specimens. Of the thirty-seven so called nonepileptic control group, seven (19 per cent) showed complete absence of free hydrochloric acid in all specimens. Five (13 per cent) showed absence of free hydrochloric acid in the first two or three specimens. The absence of free acid in one patient closely observed for more than a year, seemed to be associated with rapid deterioration. In one patient, the absence of free acid did not seem to be associated with the onset of an epileptiform attack. The total acid curve remained uniformly low in all cases of absence of free acid. The absence of free acid may not be pathognomonic of epilepsy, but in Felsen's opinion this fact seems worthy of further investigation. Periodic gastric

analyses of epileptics and more careful investigation of all neuropsychiatric cases showing anacidity are suggested.

Cholesterol Content of Bile—Nonsurgical drainage of the gall tract, following the technic of Lyon, was performed by Bockus and Eiman on nineteen patients. The bile was segregated as accurately as possible into three fractions, Lyon's "A," "B" and "C" bile. A cholesterol determination was made on the "B" and "C" bile in each case. The results support Lyon's contention that the "B" fraction of bile, as obtained by nonsurgical drainage of the gall tract, does come in large part from the gallbladder. The cholesterol content of the "B" as compared with the "C" bile is of value in determining whether or not the gallbladder is emptying. It also serves as a fairly accurate gauge of the bile concentration activity of the gallbladder and consequently of the presence or absence of gallbladder stasis.

Vital Capacity of Lungs in Hyperthyroidism—Marked reduction of the vital capacity of the lungs below 70 per cent occurred in twenty-four of fifty-seven severely toxic cases of hyperthyroidism studied by McKinlay. Reduced vital capacity of the lungs pointed more definitely to bad prognosis than did the degree of increase of the basal metabolism. The minute volume of pulmonary ventilation at rest was not a factor of the total capacity.

Maxillary Sinus Empyema in Cardiopaths—Three cases of maxillary sinus empyema have been demonstrated post mortem by Miller in patients dying from cardiac disease. In none of these cases has the sinus involvement been recognized before death. The author regards a roentgen-ray examination of the sinuses as being very important in all cases of cardiac disease, but especially so in chronic valvular affections and in subacute bacterial endocarditis. The nasal chambers and accessory sinuses should be investigated thoroughly by a competent nose and throat specialist.

Blood Phosphorus in Cancer—Buckman et al failed to find the total phosphorus content and the inorganic phosphorus content of the whole blood, plasma and cells significantly altered in cancer. The total phosphorus content of the whole blood was roughly parallel to the hemoglobin content in all persons in whom the values for the total phosphorus in the plasma and corpuscles were within normal limits. The parallelism is due to the preponderance of phosphorus in the red corpuscles. Immature red cells probably contain more phosphorus than adult ones. The phosphorus quotient of Groebly and of Vorschütz and Vorschütz is said to be of no value in the diagnosis of cancer.

Mesothelioma of Pleura—Zeckwer reports a case of primary malignant tumor of the pleura, enveloping the heart and producing metastases in the cerebrum and adrenal. Microscopically the cells presented three distinct types, spindle cells of fibroblastic morphology, epithelial-like cells forming channels, and cells producing globules of secretion. Transitions were made out between the three types, giving evidence that the cell of origin was a multipotential cell, which had the ability to differentiate both toward the epithelial and toward the fibroblastic type. Reasons are presented for considering primary malignant tumors of the pleura as being derived from the mesothelial cells of the pleura. Tumors derived from such origin should be considered in a class apart as mesothelioma, and not classified as endothelioma, carcinoma or sarcoma.

Tetrachlorphenolphthalein Liver Function Test—In 103 cases tested by Ottenberg et al, Rosenthal's method has proved a valuable index of liver function. Its use in diagnosis has sharp limitations, it is valueless in cases of obstructive jaundice. The test was useful in detecting liver disease in sixteen cases, chiefly cirrhosis, metastatic carcinoma or cardiac decompensation. Its greatest value will probably be in early diagnosis of liver metastases and in early diagnosis of cirrhosis of the liver. It was of service in helping to exclude liver disease in eighteen instances, where findings other than jaundice has suggested that possibility. There were no false positive results. Two cases of duodenal ulcer showed slight retention. This, together with the fact that one case of cirrhosis at necropsy showed a healed duodenal ulcer, suggests chronic local infections as a possible cause

of cirrhosis. In five cases of proved liver lesions the test failed. Three were cases of hepatic syphilis in adults, and a case of small cancerous metastasis. One case of extensive liver metastases, in which repeated tests gave negative results, remains unexplained. A positive test always means serious disability and in the absence of bile duct obstruction, a serious lesion of the liver. A negative test, however, does not always exclude the presence of serious liver lesions. The authors regard 5 per cent of the dye in one hour serum as suspicious, and over 8 per cent as conclusive of impaired liver function. The simplicity of the test, and the fact that absorption from the intestines and excretion by the kidneys are not complicating factors in it, recommend it for clinical use.

Venous Pressure—The main conclusion reached by Eyster and Middleton from this work is that excluding local causes of venous obstruction, abnormal venous pressures invariably mean cardiac failure independent of the cause of failure or the associated disease.

Boston Medical and Surgical Journal

191 283 332 (Aug. 14) 1924

- Product of Medical Education D. L. Fdsall Boston—p. 283
Treatment of Exophthalmic Goiter G. W. Holmes et al. Boston—p. 295
Hypertension F. R. Barnes Fall River Mass.—p. 301
Erythremia T. B. Fletcher Baltimore—p. 304
Significance of Disturbances of Micturition C. G. Smith—p. 311

Erythremia—Fletcher states that, although various measures may be efficacious in the treatment of erythremia, their action is transitory and the effect is purely palliative, as experience seems to show that no matter what measure is adopted there is a tendency of the blood count to rise later and for the subjective symptoms to return.

191 333 380 (Aug. 21) 1924

- *Mortality in Surgical Diseases of Children G. D. Cutler Boston—p. 333
Calcium Metabolism of Infants B. Hamilton—p. 339
*Pigment and Iron in Infant's Diet: Relation to Hemoglobin Formation L. W. Hill Boston—p. 342
Cod Liver Oil as an Antirachitic Agent J. Garland Boston—p. 347
*Juvenile Diabetes Treated with Insulin C. F. Friedman Boston—p. 350
Responsibility of Medical Profession Toward Tuberculosis J. B. Hawes Boston—p. 352

Mortality in Surgical Diseases of Children—Among the 4,989 cases admitted to four services on which Cutler bases his paper there were 138 deaths, a mortality of 27 per cent. Infection caused nearly one half the deaths. Empyema was the cause of the greatest number of deaths in this group but there were 462 patients who admitted suffering from this disease, a number exceeded only by admissions for cervical adenitis (522) and the mortality is only 16.66 per cent. Acute appendicitis caused forty-one deaths, the second greatest number among the infections, yet the mortality figures only 11.45 per cent because the disease was third in order of admissions (358). These figures included appendicitis with abscess and appendicitis with peritonitis, so that although the percentage is high there is some justification for it. Acute peritonitis, due to streptococcus and pneumococcus infection, produced a very high mortality 23 cases, 13 deaths, a mortality of 56.52 per cent. Septicemia proved uniformly fatal in 12 cases. Tuberculosis is responsible for a large number of the cases included in this series. There were in all 52 patients with only 8 deaths, a mortality of 1.53 per cent. Congenital malformations constituted the second group of conditions in which mortality occurred (23 per cent). Cleft palates were most numerous (402 cases), harelip was next (284 cases), then congenital pyloric stenosis (117 cases), spina bifida (110 cases), hypospadias (90 cases), harelip and cleft palate (74 cases), hydrocephalus (44 cases), atresia of anus (31 cases), megacolon (16 cases), malformation of intestines (15 cases), exstrophy of bladder (15 cases some readmissions), obliteration of bile ducts (3 cases), patent urachus (2 cases). Malformation of intestines gave a mortality of 66.66 per cent, patent urachus 50 per cent, obliteration of bile ducts and exstrophy of bladder 33.33 per cent, atresia of anus, 32.25 per cent, hydrocephalus 29.54 per cent, spina bifida, 29.09 per cent, megacolon 25 per cent, harelip and cleft palate 12.16 per cent, pyloric stenosis, 11.11 per cent,

harelip 3.16 per cent, hypospadias, 2.22 per cent, cleft palate, 0.24 per cent. There were 56 deaths from intestinal obstruction 10.83 per cent of the total mortality. Intussusception was responsible for 39 of these deaths and during this seven year period 133 patients with this type of obstruction were admitted, giving a mortality for this condition of 29.32 per cent.

Calcium Metabolism in Infants—The function of the calcium passing through the body is at present practically unknown. It is known that this constant flow of calcium is necessary and it is usually spoken of as the calcium needed for maintenance. It is obvious, says Hamilton, that an increased demand for calcium needed for maintenance would make less calcium available for the growth of the bones, and it is conceivable that this is the case in those conditions (absence of sunlight, malnutritional disturbance) which play such an important role in the production of rickets.

Iron in Infants' Diet—The purpose of Hill's paper is to attempt to show that there are good reasons for adding other foods than milk and cereal to the diet of infants during the second half year of life, but that these foods should be selected with a definite knowledge of what they contain and what purpose they serve. Hill discusses green vegetables (notably spinach), egg potato apple sauce, prune sauce and beef juice, all of these being added to the diet because of their iron content.

Insulin in Juvenile Diabetes—A case of severe juvenile diabetes which was controlled by insulin is presented by Friedman. The case suggests that under proper supervision in hospitals more latitude can be taken in regard to the time for injection of insulin. An 11 year old child of average intelligence, with little or no parental supervision, was trained to manage successfully the dietary and insulin treatment of diabetes.

Control of Tuberculosis—Hawes emphasizes these points. Exert influence to see that tuberculosis is given adequate attention in medical schools. Exert similar influence on governing boards of general hospitals to have special observation and diagnostic wards for tuberculosis. See that on the yearly program of state, county and local medical societies and associations of all kinds the subject of tuberculosis holds a place. Try to enroll the younger doctors especially those just graduating from hospitals in local tuberculosis work and make them do something and help in some way in the local tuberculosis problem even if it be very little.

Illinois Medical Journal, Oak Park

46 77 152 (Aug.) 1924

- Surgery of Thyroid J. de J. Pemberton Rochester Minn.—p. 105
Treatment of Pulmonary Tuberculosis G. T. Palmer, Springfield—p. 106
Brain Tumors: Localization and Treatment C. H. Frazier, Philadelphia—p. 111
Campaign for Lay Education J. H. Hutton Chicago—p. 117
Trend in Medical and Nursing Services W. A. Pusey Chicago—p. 118
Safeguarding Public Health C. St. C. Drake Chicago—p. 125
*Anomaly of Styloid Process Complicating Tonsillectomy L. Thompson Chicago—p. 129
*Insulin in Nondiabetic Children O. Barbour, Peoria—p. 131
Full Time Clinical Teachers in Medical Education C. L. Bonfield Cincinnati—p. 133
Management of Infantile Eczema W. A. Rosenberg Chicago—p. 137

Anomaly of Styloid Process—The styloid process in Thompson's case was 5 cm. long and 5 mm. in diameter at its attachment with the temporal bone, tapering down gradually to the width of approximately 2 mm. where it was attached to the hyoid bone.

Insulin in Nondiabetic Cases—Insulin was administered by Barbour with apparently good results in twelve nondiabetic cases: two cases of malnutrition, two of malnutrition with tuberculosis, three of malnutrition with chronic bronchitis, one of marasmus; one of acute inanition, two of acute nephritis, and to one normal infant.

Indiana State Medical Association Journal, Ft. Wayne

17 239 270 (Aug.) 1924

- Anomalies in Diseases of Urinary Organs H. G. Hamer and H. O. Mertz, Indianapolis—p. 239
Phlorizin Test in Diagnosis of Early Pregnancy N. J. Eastman Indianapolis—p. 244

Abdominal Emergencies J K Berman Indianapolis—p 246
Major Surgical Obstetrics G B Jackson, Indianapolis—p 249

Iowa State Medical Society Journal, Des Moines

14 347 394 (Aug) 1924

General Paresis S T Orton Iowa City—p 351
Tuberculosis of Cornea and Sclera G A May Des Moines—p 355
Intra Ocular Tuberculosis E G Linn Des Moines—p 358
Eye Ear Nose and Throat Symptoms Due to Dental Pathology F E Franchere Sioux City—p 362
Suppurative Pleurisy H A Spilman Ottumwa—p 364
Diseases of Ischio rectum A P Donohoe Davenport—p 368
Diseases of Myocardium F A Willius Rochester Minn—p 370
Operative Treatment of Fractures F J Cotton Boston—p 375
Twenty Years Obstetric Work in Country A H Schooley Terril—p 377

Journal of Biological Chemistry, Baltimore

60 237 479 (June) 1924

Buffer Mechanism for Calcium Concentration and Determination of Calcium Buffer Values I N Kugelmass New Haven Conn—p 237
Relation of pH to Tungstic Acid Precipitation of Protein A T Merrill Washington D C—p 257
Fat Excretion II Quantitative Relations of Fecal Lipoids W M Sperry and W R Bloor Rochester N Y—p 261
Determination of Iodine in Food Drink and Excreta J F McClendon Minneapolis—p 289
Creatin Content of Brain V J Harding and B A Eagles, Toronto, Canada—p 301
*Blood Changes and Clinical Symptoms Following Oral Administration of Phosphates H A Salvesen A B Hastings and J F McIntosh, New York—p 311
*Effect of Administration of Calcium Salts on Inorganic Composition of Blood H A Salvesen A B Hastings and J F McIntosh New York—p 327
Nutritional Requirements of Baby Chicks IV Chicks Requirement for Vitamin A E B Hart H Steenbock S Lepkovsky and J G Halpin Madison Wis—p 341
Simple Micro Vessel with Electrodes for Estimating Hydrogen Ion Concentration of Blood and Other Body Fluids F De Eds and P J Hanzlik San Francisco—p 355
*Uric Acid Problem Experimental Study on Animals and Man, Including Gouty Subjects O Folin H Berglund and C Derick, Boston—p 361
System of Blood Analysis Supplement V Improvements in Quality and Method of Preparing Uric Acid Reagent O Folin and H Trimble Boston—p 473

Effect of Administration of Phosphates—The changes in the blood and the clinical symptoms of dogs to whom phosphate solutions were given orally have been studied by Salvesen et al. If alkaline phosphates were used, no change was observed in the calcium and inorganic phosphorus content of the blood. If acid phosphates were used, there was a marked increase in the serum phosphates, but no change in the calcium. Solutions of the same pH as that of blood produced a marked increase in phosphates and a decrease in calcium of 0.5 mm. Larger doses of phosphates administered over a period of one or two days, produced violent symptoms, which had the characteristics of the so called tetany and which were independent of the pH of the solution administered. The serum phosphates increased to values varying between 2.5 to 3.9 mm, the calcium decreased from values which ranged between 1.89 to 1.58 mm. There was also a decrease in the magnesium content of serum and in one instance a decrease in the blood sugar. The injection of calcium chlorid checked all the symptoms and produced an increase in the serum calcium. The authors conclude that the clinical symptoms (tetany), produced by the oral administration of phosphates, are due to a reduction of the blood calcium.

Effect of Administration of Calcium Chlorid—The experiments reported on by Salvesen et al. show that the ingestion of calcium chlorid may produce a severe, uncompensated acidosis in dogs and human subjects with pH values of 7.13 in a dog and 7.14 in a patient suffering from acute nephritis with edema. In two cases of Bright's disease with low blood calcium and low protein, calcium lactate, given orally, produced no characteristic change in the blood. The intravenous administration of from 0.5 to 1.1 gm calcium chlorid had no effect on the acid base equilibrium of the blood, but caused a moderate rise in the phosphates. The injected calcium left the blood in from three to six hours. There was no increase in the daily excretion of calcium in urine and feces over a period of six days following the injection.

Uric Acid Problem—Folin, Berglund and Derick report at length the results of their experimental study on uric acid. These investigations were begun on the basis of the conviction that they could determine uric acid in blood with a precision unattainable in earlier work. When uric acid is injected into the blood stream of animals, the kidneys immediately take up very much uric acid. The kidneys at the same time become edematous and greatly enlarged. Up to fully 0.2 per cent of uric acid may be temporarily stored in the kidneys. The uric acid which cannot find lodgement in the kidneys remains to a large extent in the circulating blood until it is destroyed, in other words, all the other tissues seem to be more or less completely impermeable to soluble urates. The destruction of uric acid in the dog, and presumably in all other animals, seems to take place within the circulating blood, though it is possible that some is destroyed in the kidneys. The destruction of uric acid within the circulating blood proceeds with extreme velocity during and immediately after an injection (100 mg per kilogram), but soon slows down to a measurable speed, and the speed continues to diminish as the concentration of the circulating uric acid continues to sink. The uric acid destruction stops the instant the blood is removed from the living animal. Intravenous injections of uric acid (20 mg per kilogram in the form of lithium urate) into normal men are followed by excretions of from 30 to 90 per cent. The destruction in man, therefore, amounts to from 10 to 70 per cent, the average being about 50 per cent. The losses (destructions) in man are variable because the two factors involved—speed of destruction and speed of excretion—are subject to independent variations. The excretion period in man lasts from one to four days. The duration is mainly determined by the speed of destruction. The unique and characteristic high levels of uric acid in normal human blood are due to a lack of responsiveness on the part of the human kidney. High protein diets increase the responsiveness of the kidneys and thus lower the level of circulating uric acid. The characteristic lack of responsiveness on the part of the human kidney is exaggerated in gout and this is the main or only reason why the gouty carry abnormally high levels of circulating uric acid. The uric acid-destroying process in the gouty is intrinsically about the same as in normal persons but is subject to wider variations. The distribution of injected uric acid is substantially the same in gouty subjects as in normal persons. Intravenous uric acid injections (20 mg per kilogram) do not produce attacks in the gouty, but may produce enough temporary injury to the kidneys to result in a transient retention of other nitrogenous waste products than uric acid (increased nonprotein nitrogen and urea of blood). In normal persons no such retentions have been encountered.

Journal of Cancer Research, Lancaster, Pa

8 137 316 (July) 1924

*Multiple Primary Malignant Neoplasms D P Seccof New York—p 213
*Treatment of Cancer of Lip by Irradiation Report of One Hundred and Thirty Six Cases B F Schreiner and L C Kress Buffalo—p 221
Crown Gall and Its Analogy to Cancer E F Smith Washington D C—p 234
*Fundamental Harmonies and Differences Between Spontaneous Neoplasms and All Experimentally Produced Tumors M Slye Chicago—p 240
Quantitative Relations Between Factors Causing Cancer and Rapidity and Frequency of Resulting Cancerous Transformation L. Loeb St Louis—p 274
Experience with Water Cooled Roentgen Ray Tube for Deep Therapy W Stenstrom Buffalo—p 285
*Nucleocytoplasmic Ratio and Cancer T B Robertson Adelaide Australia—p 292
Vital Staining of Tumor Cells Exposure to Roentgen Ray R E. Prigson New York—p 305

Multiple Primary Malignant Neoplasms—Seccof reports a case of carcinoma of the lung and carcinoma of the rectum, each producing metastases. Sections of lung showed metastatic nodules of the rectal carcinoma, separate and distinct from the large primary carcinoma of the right lung. On the other hand, the primary lung tumor, in addition to growth in the regional lymph nodes, suprarenals and omentum, had metastasized to the pelvis, so that the unusual occurrence of

a primary lung tumor metastasis invading a primary rectal tumor could be demonstrated

Roentgenotherapy of Lip Cancer—Schreiner and Kress are convinced that they can demonstrate that epithelioma of the lip has been healed and remained healed over a more or less extended period of time by treatment with unfiltered roentgen rays. At least 34 per cent of cases which have involvement of the lymphatics, but from the standpoint of surgery are considered in an operable class, can be healed by roentgen-ray therapy alone. From their experience with cases in which there is extensive involvement of the lymphatics, peristomium of the mandible and ulceration, they believe it is useless to treat by irradiation with any expectation of a cure.

Harmonies and Differences Between Spontaneous and Experimental Tumors—Slye asserts that certain fundamental harmonies and certain fundamental differences exist between spontaneous neoplasms and all artificially produced tumors. The essential harmony in all these is the fact that all tumors, both spontaneous and experimental, have been shown to depend fundamentally on the inherited predisposition of the animal's tissues. In grafted tumors, the success of the experiment depends fundamentally on the inherited tendency of the animal's tissues to regenerate normally and furnish proper conditions of attachment and food, instead of abnormally, as is the case in spontaneous cancer. In liver, stomach and intestinal tumors resulting from parasitic infestation, the success of the experiment depends on the inherited tendency of the animal's tissues to attempt regeneration under such irritation, and the violence of the method which overthrows such normal regenerative powers as the animal's tissues may possess, thus causing abnormal proliferation. Many animals and many strains thus far tested, both by artificially introduced and by normally ingested parasites, have been unable to regenerate the irritated tissues either normally or abnormally, and their organs have merely gone to pieces in degenerative changes. From tar painting the same type of squamous-cell carcinomas of the skin arise as arise spontaneously from similar chronic skin lesions in mice produced by many other causes, and in all probability when this type of experiment has been thoroughly tested out, the success of the experiment will be found to depend upon the inherited tendency to skin carcinoma, which could equally well be produced by other types of chronic attacks on a susceptible skin. The fundamental difference between spontaneous neoplasms and all artificially produced tumors seems to be that the spontaneous tumor is the product of the animal's own inherent metabolism, that is, the inherited tendency to regenerate abnormally under various assaults on the tissues, while, to date, all artificially produced tumors seem to indicate that the violence of the method may have overthrown inherent cancer-resistant mechanisms, with the probability at the same time of the overthrow of other vital fundamental metabolic mechanisms. These harmonies between spontaneous and artificially produced tumors give promise that it may be possible to strengthen the cancer-resistant mechanism, since there seem to be varied grades of such resistant mechanisms, and there are evidently resistant mechanisms that cannot be overthrown by the most violent and long-continued methods yet attempted.

Nucleocytoplasmic Ratio and Cancer—The measurements, by Sokoloff of the nucleocytoplasmic ratio in cancer cells, Robertson says are in harmony with the view that cancer arises from the production of cells which are capable of undergoing division at abnormally low values of the nucleocytoplasmic ratio. In particular, they demonstrate that when such cells arise by asymmetrical mitoses, the daughter cell with the larger nucleocytoplasmic ratio is unable to multiply and is ultimately overwhelmed by the multiplication of the malignant cells arising from the daughter cell which possesses the lower nucleocytoplasmic ratio.

Kansas Medical Society Journal, Topeka

24 219 250 (Aug.) 1924

- Fractures of Humerus W C Campbell Memphis Tenn.—p 219
Treatment of Pulmonary Tuberculosis by Artificial Pneumothorax C O Crese Colorado Springs—p 222
Head Pain of Nasal Origin H L Scales Hutchinson—p 225
Trichinosis C N Johnson Wichita—p 230

Laryngoscope, St. Louis

34 593 672 (Aug.) 1924

- Correction of Congenital Deformities of Nose Report of Nine Selected Cases J D Lewis Minneapolis—p 593
*Case of Pneumococcal Meningitis with Apparent Cure Followed by an Obscure Frontal Lobe Abscess H S Wieder Philadelphia—p 609
*Lymphangioma of Larynx R Kramer and S Yankauer New York—p 621
Case of Chronic Suppurative Frontal Sinusitis N P Lobsenz Paterson N J—p 630
Occipital Abscess in Mastoid Disease H Dintenfuss Philadelphia—p 633
*Use of Gentian and Acriviolet in Infections of Upper Respiratory Tract and Ear J H Abraham, New York—p 637
Atypical Mastoiditis—Case Report J M Brown Los Angeles—p 644
*Deficient Vitamin Diets as Factor in Otolaryngologic Conditions J A Stucky Lexington Ky—p 647
Peanut in Bronchus Nine Weeks Bronchoscopy Recovery T R Gittins Sioux City Iowa—p 655
Investigation for Safer Instruments S L Ruskin New York—p 657
Elevator for Submucous Resection M C Myerson Brooklyn—p 660

Pneumococcus Meningitis with Frontal Lobe Abscess—During the lifetime of Wieder's patient the brain abscess could not be located. The necropsy disclosed a frontal lobe abscess extending to the Rolandic area and almost down to the temporal lobe. It measured 58 by 45 by 45 mm, contained thick greenish pus and was located 27 mm from the anterior extremity of the right cerebral hemisphere. Laterally only 3 mm of brain tissue separated the abscess from the subarachnoid space. Smears from the pus, however, showed long chains of gram-positive streptococci.

Lymphangioma of Larynx—Kramer and Yankauer have observed two cases of lymphangioma of the larynx and one case of hemangioma and lymphangioma combined. Laryngeal examination revealed a definite sign of benign neoplasms of vascular origin, namely the "phonation sign," observed in both hemangiomas and lymphangiomas.

Gentian Violet and Acriviolet in Nose and Throat Infections—Abraham reports good results from the use of gentian violet in the furunculosis of the auricle, ala nasi and skin, septal abscess, infections of the accessory nasal sinuses, of the external and middle ear, mastoid and throat, and Vincent's angina. In streptococcus infections of the pharynx, tonsils and larynx, it has proved of greater value than any other agent. In mastoid dressings, it has proved of value in clearing the infection and preventing further complications. It is also of use when applied within the nose and throat, following surgical procedures, either preventing infection or controlling infections when present.

Deficient Vitamin Diets in Otolaryngologic Conditions—Stucky is convinced from clinical observations that the endocrine imbalance and decrease in the alkali reserve of the average case is due to improper feeding. In some schools and orphanages he has been able to prevent the usual post-festival epidemic of sore throats, noses and ears by carefully regulating the diet of the children during the season, keeping them away from the usual overindulgence of these festival occasions. He sees fewer cases of acute otitis media which require myringotomy for relief, fewer sore throats (tonsillitis), and a large decrease in running noses.

Medical Journal and Record, New York

120 153 200 (Aug 20) 1924

- Chronic Diseases E P Boas and W H Livingston New York—p 153
Radium Therapy in Gynecology T B Bland Philadelphia—p 156
*Primary Sarcoma of Stomach H Klaus Weehawken N J—p 161
Gas Filtering Ventilator for Coryza and Asthma G N Jack Buffalo—p 164
Foreign Bodies in Esophagus Six Cases J Friedman and S D Greenfield Brooklyn—p 168
Simplified Transfusion Apparatus W F Dutton Philadelphia—p 171
Retractor for Amputation A N Turkus Brooklyn—p 171
Tetanus as Postoperative Complication I Kross New York—p 172
Deficiency of Halogens in Modern Diets C E Carter Los Angeles—p 174

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- Islets of Langerhans and Functions of Pancreas S Vincent London—p xlix
Differential Diagnosis of Diseases of Thyroid Gland N W Gillette Toledo Ohio—p liii
Selective Tissue Action of Posterior Pituitary Gland R C Meehlig Detroit—p li

Adrenalinuria H Friend New York—p 112
Endocrine Disturbances in Rhinologic and Laryngologic Cases L Hubert New York—p 113

Primary Sarcoma of Stomach—Klaus performed a pylorotomy according to the Billroth type II method with a posterior gastro enterostomy in his case. About two thirds of the stomach was removed. Convalescence was smooth and uneventful. The tumor proved to be a myofibrosarcoma. Examination of the patient eight months after operation showed him to be in excellent health. Up to the time this article was written there had been no evidences of a recurrence. He had gained 60 pounds in weight, had no gastric symptoms, and no abdominal pain. Hemoglobin was 95 per cent, red blood cells 4,800,000.

Medical Journal and Record, New York

120 101 152 (Aug.) 1924

Radium Therapy in Gynecology P B Bland Philadelphia—p 101
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Tuberculous Disease of Spleen T Reder St. Louis—p 107
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Case of Rat Bite Fever in Hawaii J A Morgan Honolulu T H—p 113
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Two Cases of Botulism W A Kinferton and J Krohn St. Bayonne N J—p 117
*Primary Malignant Tumors of the Liver H I Goldstein Camden N J—p 119
Dietetic Treatment of Obesity E C Cornwall Brooklyn—p 124

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Psychanalysis of Organic Conditions O Rank Vienna—p xxxii
Selection of Cases for Psychanalysis A Stern New York—p xxxv
Technical Problems in Psychanalysis C P Oberndorf New York—p xxxix
False Confession R Reed Cincinnati—p xliii
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Lnccephalic Features of 1921-1922 Epidemic Influenza I Moncalvi Milan Italy—p xliiii

Primary Sarcoma of Alimentary Canal—In a study of the literature of the world the necropsy records of the University of Pennsylvania, reports from hospitals, clinicians and surgeons in all the large medical centers of the United States. Goldstein has been able to collect the following cases of primary sarcoma of the alimentary canal: liver, 59, pancreas, 20, gallbladder 16, esophagus, 38, tongue 66, stomach 266, small and large intestines 139, 18 of the appendix (including his own case), 66 of the spleen and 125 of the thyroid gland—about 813 cases in all. Cases of primary cancer and sarcoma of the liver are reported.

Missouri State Medical Association Journal, St. Louis

21 173 208 (June) 1924

Cellular Reactions After Roentgen Ray and Radium Therapy H R Wahl Kansas City Kan—p 173
Gynecologic Diseases of Interest to Internist H S Crockett St. Louis—p 177
Syphilis W W Graves St. Louis—p 179
Suspension Extension Apparatus J G Montgomery Kansas City—p 189

Philippine Islands Medical Association Journal, Manila

4 209 250 (June) 1924

Necropsy Incidence and Pathologic Lesions of Typhoid Fever in Philippine Islands J Z S Cruz—p 209
Case of Diverticulum of Bladder J Eduque—p 215
Typhoid Asthenia A J Makalintal—p 219
Common Whipworm as Health Hazard L Leiva—p 223
Severe Case of Cerebral Hemorrhage from Industrial Accident J P Celis—p 227

Typhoid in Philippines—Out of 10,185 consecutive necropsies performed in the city morgue of Manila during a period of more than sixteen years, 361 were typhoid cases, an average of one typhoid for every twenty-eight necropsies. The yearly and seasonal incidence shows a tendency to increase every year and a liability for typhoid mortality to occur every month. Although males are more susceptible to typhoid infection than females yet the disease is as severe and as fatal to women as to men. The greatest susceptibility as well as the greatest mortality of typhoid can be said to occur between the ages of 15 and 25 years. The triad of the

specific lesions of the disease is almost the same as that found in temperate climates except that the average enlargement of the spleen in this country is less. The involvement of the cecum occurred in one third of these cases, and of the colon in only one fourth, which indicates that the extent of the intestinal lesion has no direct relation to the mortality of the disease. This series shows an extraordinarily high percentage of intestinal perforation (156) and intestinal hemorrhage (119), about five times the incidence in temperate climates. The presence of adult ascarides in 47 per cent of the perforated cases should be considered a possible responsible factor.

U S Naval Medical Bulletin, Washington, D C

21 1 144 (July) 1924

U S Naval Pharmacist's Mate School G Pickrell—p 1
Standardization of Quarterly Marks of Hospital Corps O J Mink and J A McCormack—p 35
Hospital Corps Instruction G W Calver—p 41
Direct Vision Cystoscopy R Hayden—p 63
General Larceny C J Stuart—p 68
Wassermann Reaction C I Behrens—p 72
Color Test Not Reliable as Mental Test R H Hunt—p 74
Judging Angina Following Double Coronary Arteries H S Crayton—p 76
Specific Treatment for Chancroid A J Cheney—p 78

21 145 264 (Aug.) 1924

Neurosyphilis F W Reason—p 145
Auricular Fibrillation D Ferguson—p 164
Surgical Treatment of Sinusitis G B Trible—p 174
Castella Nicholson in Chronic Amebic Dysentery C R W French and A W Sellards—p 184
Clearing Up Diphtheria Carriers R J Longbrugh—p 190
Preparation of Colloidal Cold C F Behrens—p 191
Case of Osteomyelitis of Dorsal Spine R J Longbrugh—p 193
Cause for Failure of Fracture and Amputation Stump to Heal L H Williams—p 201
Foreign Body in Appendix G A Clert—p 202
Internal Derangement of Knee Joint I C Merrill—p 203

Castella Nicholson in Amebic Dysentery—Sixteen cases of long standing amebic dysentery were treated by French and Sellards during an exacerbation with a preparation of *Castella nicholsoni*. The therapeutic results varied widely. In about one third of the cases, the symptoms and amebias disappeared in two or three days. In another third of this group the same improvement occurred but much less promptly, in the remaining third the results were poor. More precisely the amebias disappeared in eleven of the sixteen cases but on an average of about one week after treatment was discontinued cysts were found in the stools. The authors emphasize the importance of using potent preparations of castella. They have not, however, determined either the maximum tolerated dosage of this drug nor the total period of time for which it can be used continuously. In one case effective therapeutic doses were continued for nineteen consecutive days. In contrast to emetin and its derivatives preparations of castella can be administered easily and pleasantly by mouth. It is an excellent stimulant to the appetite and patients tend to gain rather than lose weight while under treatment. In the authors' opinion castella, when properly used is equally or slightly more effective than emetin in amebic dysentery. Moreover it can be employed without risk attendant in the use of maximal doses of emetin. Neither drug has proved adequate in chronic amebiasis, though castella merits much more investigation. In their opinion the refractory behavior of long-standing infections is probably due in a large measure to the extensive and deep seated nature of the amebic lesions rather than primarily to the existence of a drug-resistant strain of amebias.

Clearing Up Diphtheria Carriers—To remove the diphtheria bacilli from the throats of carriers, Longbrugh advocates a short series of ether inhalations. The inhalations are given by the open method every morning for about five minutes sufficient ether being given to produce marked drowsiness.

Virginia Medical Monthly, Richmond

51 265 326 (Aug.) 1924

*Human Anthrax Shaving Brush Infections W B Blanton Richmond—p 265
Therapeutic Problems of Old Age T R Boggs Baltimore—p 270
*Case of Arspenamin Dermatitis Treated with Sodium Thiosulphate B E Harrell Norfolk—p 271

Meaning of Dementia Praecox J K Hall Richmond—p 276
Treatment of Appendicitis in Children B M Baker Norfolk—p 280
Backache C B Grear Honaker—p 282
Treatment of Pyelitis R C Bryan Richmond—p 284
Ultraviolet Light F Hancock Norfolk—p 289
Squint C A Young Roanoke—p 292
Sinusitis from Standpoint of General Practitioner C B Tribble Washington D C—p 294
Bladder in Gynecologic Diagnosis and Treatment G F Douglas Birmingham Ala—p 299
Therapeutic Application of Roentgen Rays J Sheehan Greensboro N C—p 302
Hypertrophic Pyloric Stenosis in Child T S Usery Norton—p 309
Vincent Angina Treated with Antimony Potassium Tartrate R A Vonderlehr Richmond—p 309

Human Anthrax—Blanton reports a case of cutaneous anthrax. About 130 cases are reported annually. Attention is directed to the shaving brush as the most fertile source for the sporadic dissemination of this disease.

Arsphenamin Dermatitis Treated with Sodium Thiosulphate—No intravenous preparation of sodium thiosulphate being available Harrell gave his patient an initial dose of 2 gm by mouth followed by 1 gm three times daily. At the end of forty-eight hours the temperature had dropped to 99 F and the body was dry. The following day the temperature was normal, there was no moisture anywhere and the hands and feet were beginning to desquamate. On the seventh day the conjunctivitis had disappeared and the patient was walking about. Numbness and tingling, which had been very troublesome soon after admission, had also disappeared. He was discharged on the eleventh day. At this time desquamation was complete over body and was well advanced on hands and feet. The general condition was excellent.

FOREIGN

An asterisk () before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

36 285 334 (July) 1924

Acute Ulceration of Vulva J E R McDonagh—p 285
Skin Sensitiveness to Proteins and Toxins R C Low—p 292
Scalp Ringworm in Adult G H Lancashire—p 312
Case of Leprosy Apparent Cure G H Lancashire—p 312

British Journal of Ophthalmology, London

8 305 352 (July) 1924

Concussion Changes in Military Practice W Lister—p 305
Arrow Test for Astigmatism E E Maddox—p 318
Tuberculous Choroiditis Terminated by Meningitis and Multiple Brain Abscesses T M Bride—p 320
Intra Ocular Sarcoma Causing Symptoms of Acute Hyalitis T W Butler and E W Assinder—p 321

British Journal of Radiology, London

29 132 (Jan) 1924

*Basis in Experimental Pathology for Radium Therapy of Malignant Disease R H Parry—p 3
Dislocation of Pisiform Bone J H Mather—p 17
Roentgen Ray and Radium Protection Committee—p 19

Radium Therapy of Malignant Disease—Parry sums up his review of this subject as follows. Considered from the point of view of practical application in treatment, both radium and roentgen rays have their advantages and disadvantages. Thus the production of roentgen rays from a bulb supplies a far larger dose of radiation than the limited quantities of radium at disposal but such roentgen rays are of lower penetrating power and the output varies from moment to moment. This is not the case where a radium salt is used for treatment, the half period of decay (2000 years) being negligible and even in the case of a tube of emanation the rate of decay is regular, so that the radiation value of such a tube is calculable with ease. Furthermore application of radium implies a concentration of the radiations locally and a focus of irradiation of small bulk. This has its advantages when the mass of cancer is small, but is disadvantageous and inferior to roentgen rays when a large area requires equal irradiation. On the other hand, owing to this local concentration and greater penetration of the gamma rays, masses of growth refractory to roentgen rays may rapidly disappear with radium. Up to the present, radium

has been tried mainly in the cases of inoperable malignant disease, and then often with markedly encouraging results. There have also been numerous disasters partly due to inefficient technic, partly to failure to recognize contraindications for its application. An existing infection is aggravated, and associated with this a rapid increase in size or the growth may result, edema is intensified. The absorption of the products of destruction of the irradiated growth may result in acute general symptoms and reported deaths after intense irradiations may possibly be ascribed to this cause. Too much stress cannot be laid on dosage where treatment with radium is concerned. To obtain the optimum result there exists no doubt an optimum dosage, so that growth of the neoplastic cells but not their power for inducing active immunity, is destroyed while at the same time the resulting damage to the host is a minimum. This dosage as determined by time quantity and mode of application varies for different tumors and even for similar tumors under different conditions and in different localities. Radium is a more delicate instrument than the knife, and not less potent for good or for ill.

29 33 72 (Feb) 1924

*Regeneration of Bone After Intensive Irradiation of Malignant Disease C C Anderson—p 37
*Comparative Study of Normal and Malignant Tissues Grown in Artificial Culture A H Drew—p 43
*Traumatic Obturator Dislocation of Both Hips J H Mather—p 61
Observations on Passage of Barium Sulphate Meal in Twenty-Four Cases of Mental Disorder R V Stanford and E Goodall—p 63
Orthometer H O Gunnawardene and S Lilienstein—p 66

Regeneration of Bone After Intensive Irradiation—The cases cited by Anderson show that continuity of a bone, the seat of a fracture caused by malignant disease—especially when sarcomatous in origin—can be restored by intensive radiation, whether the disease is primary or secondary.

Biologic Relations Between Tumor Parenchyma and Stroma—The experiments reported on by Drew bring out very clearly the close biologic relations subsisting between tumor parenchyma and stroma. Although derived from the adult host in which the tumor is growing for the time being the stroma of a transplanted tumor behaves in culture like an embryonic tissue rather than like that of an adult. The presence of stroma elements although not necessary for the growth of the parenchyma in vitro exerts a profound influence on it and in particular partly determines the degree of differentiation reached by the tumor cells. Continued growth of normal and tumor cells in vitro is only obtained in the presence of substances so far only found in embryonic extracts. A salt mixture in which the calcium is present in the colloidal state can with the addition of embryo extract replace plasma for this work.

Traumatic Obturator Hip Dislocation—While in a stooping position with legs apart Mather's patient was struck on the lower part of the back by a sack of grain falling from a height. He lay on his back with the lower limbs abducted slightly flexed and externally rotated at the hip joints. The adductor longus tendons were prominent and the heads of the femora could be palpated in the region of the symphysis pubis. On passive movement adduction was limited at once internal and external rotation and extension were diminished. On radiographic examination the heads of the femora were shown dislocated downward and inward into the obturator foramina.

British Journal of Tuberculosis, London

18 91 132 (July) 1924

Artificial Light Baths in Treatment of Tuberculosis J H Sequeira—p 91
Visit to Ley in G R Girdlestone—p 93
Training of Nurses for Care of Cases of Pulmonary Tuberculosis I W Edward—p 100
Tuberculosis Problem in Scotland J Guy—p 102

British Medical Journal, London

2 163 218 (Aug 2) 1924

*Biliary Infections Diagnosis D P D Wilkie—p 163
*Periarterial Sympathectomy K Black—p 16

Biliary Infections—Failure to detect and remove a stone from the common duct Wilkie believes to be the usual cause

Adrenalinuria H. Friend New York—p. lx
Endocrine Disturbances in Rhinologic and Laryngologic Cases L. Hubert New York—p. lxvi

Primary Sarcoma of Stomach—Klaus performed a pylorotomy according to the Billroth type II method with a posterior gastro-enterostomy in his case. About two thirds of the stomach was removed. Convalescence was smooth and uneventful. The tumor proved to be a myofibrosarcoma. Examination of the patient eight months after operation showed him to be in excellent health. Up to the time this article was written there had been no evidences of a recurrence. He had gained 60 pounds in weight, had no gastric symptoms and no abdominal pain. Hemoglobin was 95 per cent, red blood cells, 4,800,000.

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Two Cases of Botulism W. A. Kinkerton and J. Krohnst Baltimore N. J.—p. 117
*Primary Malignant Tumors of the Liver H. I. Goldstein Camden N. J.—p. 119
Dietetic Treatment of Obesity E. C. Cornwall Brooklyn—p. 124

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Psychanalysis of Organic Conditions O. Rank Vienna—p. xxxiii
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Psychopathic Child S. Brown New York—p. xlvii
Encephalitic Features of 1921-1922 Epidemic Influenza I. Monetti, Milan Italy—p. xlviii

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Missouri State Medical Association Journal, St. Louis

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Suspension Extension Apparatus J. G. Montgomery Kansas City—p. 189

Philippine Islands Medical Association Journal, Manila

4 209 250 (June) 1924

*Necropsy Incidence and Pathologic Lesions of Typhoid Fever in Philippine Islands J. Z. S. Cruz—p. 209
Case of Diverticulum of Bladder J. Eduque—p. 215
Typhoid Asthenia A. J. Makalintal—p. 219
Common Whipworm as Health Hazard L. Ieva—p. 223
Severe Case of Cerebral Hemorrhage from Industrial Accident J. P. Celis—p. 227

Typhoid in Philippines—Out of 10,185 consecutive necropsies performed in the city morgue of Manila during a period of more than sixteen years, 361 were typhoid cases, an average of one typhoid for every twenty-eight necropsies. The yearly and seasonal incidence shows a tendency to increase every year and a liability for typhoid mortality to occur every month. Although males are more susceptible to typhoid infection than females, yet the disease is as severe and as fatal to women as to men. The greatest susceptibility as well as the greatest mortality of typhoid can be said to occur between the ages of 15 and 25 years. The triad of the

specific lesions of the disease is almost the same as that found in temperate climates except that the average enlargement of the spleen in this country is less. The involvement of the cecum occurred in one third of these cases and of the colon in only one fourth, which indicates that the extent of the intestinal lesion has no direct relation to the mortality of the disease. This series shows an extraordinarily high percentage of intestinal perforation (156) and intestinal hemorrhage (119), about five times the incidence in temperate climates. The presence of adult ascarides in 47 per cent of the peritonized cases should be considered a possible responsible factor.

U. S. Naval Medical Bulletin, Washington, D. C.

21 144 (July) 1924

U. S. Naval Pharmacists' Mate School G. Pickrell—p. 1
Standardization of Quarterly Marks of Hospital Corps O. J. Mink and J. A. McCormick—p. 35
Hospital Corps Instruction G. W. Calver—p. 41
Direct Vision Cystoscopy R. Hayden—p. 65
General Paresis C. J. Stuart—p. 68
Wassermann Reaction C. I. Behrens—p. 72
Color Test Not Reliable as Mental Test R. H. Hunt—p. 74
Ludwig's Angina Following Double Peritonsillar Abscess H. S. Craig—p. 76
Specific Treatment for Chancroid A. J. Cheney—p. 78

21 145 264 (Aug.) 1924

Neurosyphilis I. W. Rison—p. 145
Auricular Fibrillation D. Ferguson—p. 164
Surgical Treatment of Syphilis G. B. Trable—p. 174
Castella Nicholson in Chronic Amebic Dysentery C. R. W. French and A. W. Sellards—p. 184
Clearing Up Diphtheria Carriers R. I. Longbaugh—p. 190
Preparation of Colloidal Cold C. I. Behrens—p. 191
Cause of Osteomyelitis of Dorsal Spine K. I. Longbaugh—p. 19
Cause for Failure of Fracture and Amputation Stump to Heal J. H. Williams—p. 201
Foreign Body in Appendix G. A. Liert—p. 202
Internal Derangement of Knee Joint I. C. Merrill—p. 205

Castella Nicholson in Amebic Dysentery—Sixteen cases of long-standing amebic dysentery were treated by French and Sellards during an exacerbation with a preparation of *Castella nicholsoni*. The therapeutic results varied widely. In about one third of the cases, the symptoms and amebiasis disappeared in two or three days; in another third of this group the same improvement occurred but much less promptly; in the remaining third the results were poor. More precisely the amebiasis disappeared in eleven of the sixteen cases, but on an average of about one week after treatment was discontinued cysts were found in the stools. The authors emphasize the importance of using potent preparations of castella. They have not however determined either the maximum tolerated dosage of this drug nor the total period of time for which it can be used continuously. In one case effective therapeutic doses were continued for nineteen consecutive days. In contrast to emetin and its derivatives preparations of castella can be administered easily and pleasantly by mouth. It is an excellent stimulant to the appetite and patients tend to gain rather than lose weight while under treatment. In the authors' opinion castella, when properly used, is equally or slightly more effective than emetin in amebic dysentery. Moreover, it can be employed without risk attendant in the use of maximal doses of emetin. Neither drug has proved adequate in chronic amebiasis, though castella merits much more investigation. In their opinion the refractory behavior of long-standing infections is probably due, in a large measure, to the extensive and deep-seated nature of the amebic lesions rather than primarily to the existence of a drug-resistant strain of ameba.

Clearing Up Diphtheria Carriers—To remove the diphtheria bacilli from the throats of carriers, Longbaugh advocates a short series of ether inhalations. The inhalations are given by the open method every morning for about five minutes, sufficient either being given to produce marked drowsiness.

Virginia Medical Monthly, Richmond

51 265 326 (Aug.) 1924

*Human Anthrax Shaving Brush Infections W. B. Blanton Richmond—p. 265
Therapeutic Problems of Old Age T. R. Boggs Baltimore—p. 270
*Case of Arspenamin Dermatitis Treated with Sodium Thiosulphate B. E. Harrell Norfolk—p. 274

- Meaning of Dementia Praecox J K Hall Richmond—p 276
Treatment of Appendicitis in Children B M Baker Norfolk—p 280
Backache C B Greear Honaker—p 282
Treatment of Pylitis R C Bryan Richmond—p 284
Ultraviolet Light F Hancock Norfolk—p 289
Squint C A Young Roanoke—p 292
Sinusitis from Standpoint of General Practitioner G B Trible Washington D C—p 294
Bladder in Gynecologic Diagnosis and Treatment G F Douglas Birmingham Ala—p 299
Therapeutic Application of Roentgen Rays J Sheehan Greensboro N C—p 302
Hypertrophic Pyloric Stenosis in Child T S Usery Norton—p 309
Vincent's Angina Treated with Antimony Potassium Tartrate R A Vonderlehr Richmond—p 309

Human Anthrax—Blanton reports a case of cutaneous anthrax. About 130 cases are reported annually. Attention is directed to the shaving brush as the most fertile source for the sporadic dissemination of this disease.

Arspenamin Dermatitis Treated with Sodium Thiosulphate—No intravenous preparation of sodium thiosulphate being available Harrell gave his patient an initial dose of 2 gm by mouth followed by 1 gm three times daily. At the end of forty-eight hours the temperature had dropped to 99° F and the body was dry. The following day the temperature was normal, there was no moisture anywhere and the hands and feet were beginning to desquamate. On the seventh day the conjunctivitis had disappeared and the patient was walking about. Numbness and tingling, which had been very troublesome soon after admission, had also disappeared. He was discharged on the eleventh day. At this time desquamation was complete over body and was well advanced on hands and feet. The general condition was excellent.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

36 283-334 (July) 1924

- Acute Ulceration of Vulva J E R McDonagh—p 285
Skin Sensitiveness to Proteins and Toxins R C Low—p 292
Scalp Ringworm in Adult G H Lancashire—p 312
Case of Leprosy Apparent Cure G H Lancashire—p 312

British Journal of Ophthalmology, London

8 305-352 (July) 1924

- Concussion Changes in Military Practice W Lister—p 305
Arrow Test for Astigmatism E E Maddox—p 318
Tuberculous Choroiditis Terminated by Meningitis and Multiple Brain Abscesses T M Bride—p 320
Intraocular Sarcoma Causing Symptoms of Acute Hyalitis T W Butler and E W Assinder—p 321

British Journal of Radiology, London

29 132 (Jan) 1924

- *Basis in Experimental Pathology for Radium Therapy of Malignant Disease R H Parry—p 3
Dislocation of Pisiform Bone J H Mather—p 17
Roentgen Ray and Radium Protection Committee—p 19

Radium Therapy of Malignant Disease—Parry sums up his review of this subject as follows. Considered from the point of view of practical application in treatment, both radium and roentgen rays have their advantages and disadvantages. Thus the production of roentgen rays from a bulb supplies a far larger dose of radiation than the limited quantities of radium at disposal but such roentgen rays are of lower penetrating power and the output varies from moment to moment. This is not the case where a radium salt is used for treatment the half period of decay (2000 years) being negligible and even in the case of a tube of emanation the rate of decay is regular so that the radiation value of such a tube is calculable with ease. Furthermore application of radium implies a concentration of the radiations locally and a focus of irradiation of small bulk. This has its advantages when the mass of cancer is small, but is disadvantageous and inferior to roentgen rays when a large area requires equal irradiation. On the other hand owing to this local concentration and greater penetration of the gamma rays, masses of growth refractory to roentgen rays may rapidly disappear with radium. Up to the present, radium

has been tried mainly in the cases of inoperable malignant disease, and then often with markedly encouraging results. There have also been numerous disasters, partly due to inefficient technique, partly to failure to recognize contraindications for its application. An existing infection is aggravated, and associated with this a rapid increase in size of the growth may result, edema is intensified. The absorption of the products of destruction of the irradiated growth may result in acute general symptoms and reported deaths after intense irradiations may possibly be ascribed to this cause. Too much stress cannot be laid on dosage where treatment with radium is concerned. To obtain the optimum result there exists no doubt an optimum dosage so that growth of the neoplastic cells, but not their power for inducing active immunity is destroyed, while at the same time the resulting damage to the host is a minimum. This dosage is determined by time quantity, and mode of application varies for different tumors and even for similar tumors under different conditions and in different localities. Radium is a more delicate instrument than the knife, and not less potent for good or for ill.

29 33-72 (Feb) 1924

- *Regeneration of Bone After Intensive Radiation of Malignant Disease C C Anderson—p 37
*Comparative Study of Normal and Malignant Tissues Grown in Artificial Culture A H Drew—p 43
*Traumatic Obturator Dislocation of Both Hips J H Mather—p 61
Observations on Passage of Barium Sulphate Meal in Twenty Four Cases of Mental Disorder R V Stanford and E Goodall—p 63
Orthometer H O Gunawardene and S Lilienstein—p 66

Regeneration of Bone After Intensive Irradiation—The cases cited by Anderson show that continuity of a bone the seat of a fracture caused by malignant disease—especially when sarcomatous in origin—can be restored by intensive radiation, whether the disease is primary or secondary.

Biologic Relations Between Tumor Parenchyma and Stroma—The experiments reported on by Drew bring out very clearly the close biologic relations subsisting between tumor parenchyma and stroma. Although derived from the adult host in which the tumor is growing for the time being the stroma of a transplanted tumor behaves in culture like an embryonic tissue rather than like that of an adult. The presence of stroma elements, although not necessary for the growth of the parenchyma in vitro, exerts a profound influence on it and in particular partly determines the degree of differentiation reached by the tumor cells. Continued growth of normal and tumor cells in vitro is only obtained in the presence of substances so far only found in embryonic extracts. A salt mixture in which the calcium is present in the colloidal state can with the addition of embryo extract, replace plasma for this work.

Traumatic Obturator Hip Dislocation—While in a stooping position with legs apart Mathers patient was struck on the lower part of the back by a sack of grain falling from a height. He lay on his back with the lower limbs abducted slightly flexed and externally rotated at the hip joints. The adductor longus tendons were prominent and the heads of the femora could be palpated in the region of the symphysis pubis. On passive movement adduction was limited at once internal and external rotation and extension were diminished. On radiographic examination the heads of the femora were shown dislocated downward and inward into the obturator foramina.

British Journal of Tuberculosis, London

18 91-132 (July) 1924

- Artificial Light Baths in Treatment of Tuberculosis J H Sequeira—p 91
Visit to Ley in G R Girdlestone—p 95
Training of Nurses for Care of Cases of Pulmonary Tuberculosis P W Edwards—p 100
Tuberculosis Problem in Scotland J Guy—p 102

British Medical Journal, London

2 163-218 (Aug 2) 1924

- *Biliary Infections Diagnosis D P D Wilkie—p 163
*Periaxial Sympathectomy K Black—p 165

Biliary Infections—Failure to detect and remove a stone from the common duct Wilkie believes to be the usual cause

of recurrent symptoms after operation, and, where doubt exists, incision and exploration of the duct should invariably be practiced. The condition of the pancreas, the appendix, the stomach and duodenum must be investigated, as coincident lesions in these organs are by no means rare and may require to be dealt with, that complete recovery may follow. Only with good anesthesia and a free incision can the complete pathologic picture be displayed and adequate treatment be safely employed. Inadequate operation can only bring disappointment to the patient and discredit to surgery. The removal of several hundred gallstones will avail nothing if the one which was the real cause of the trouble be left behind. To remove one or more calculi and leave an infected, thickened and functionless gallbladder may give the patient some relief but will not result in cure and is evidence of a failure on the part of the surgeon to appreciate the intrinsic mural character of the gallbladder infection. Timely preoperative diagnosis and complete assessment of pathologic change at operation are the two essentials for the successful treatment of biliary infections.

Periarterial Sympathectomy—Black reports ten cases in which periarterial sympathectomy was performed to good advantage. These cases were all cases of leprosy in which one or more ulcers on the foot or leg had failed to heal.

2 219 258 (Aug. 9) 1924

Progress and Prospects in Chemotherapy H. H. Dale—p. 219

*Latent Jaundice During Arsenobenzol Treatment W. I. Gerrard—p. 224

*Posture in Difficult Labor R. C. Buist—p. 226

Role of Practitioner in Preventive Medicine P. MacDonald—p. 227

Sun Cure H. J. Grunwald—p. 234

Latent Jaundice During Arsenobenzol Treatment—It is suggested by Gerrard that the van de Bergh test, if used as a routine in cases of syphilis undergoing treatment by arsenobenzol compounds affords a strong safeguard against the development of the grave condition of postarsphenamin jaundice fatalities from which are more frequent than general mortality statistics would lead one to believe. The small amount of serum necessary for the test is readily obtained when taking the blood for the routine Wassermann reactions.

Posture in Difficult Labor—Buist has found the knee-face posture to be much easier than the hanging leg position which has proved so irksome to the patient that it has not always been possible to maintain it for a sufficient time. Should it be found that the measure of its influence approximates to that of the hanging leg posture it would offer a valuable aid in the slightly narrow pelvis.

Irish Journal of Medical Science, Dublin

5 293 338 (July) 1924

Intrathoracic Suppurative Conditions T. G. Moorhead—p. 293

Protein Metabolism in Animal Body W. R. Fearon—p. 303

Cases of Fur Dermatitis W. G. Harvey—p. 316

Evolution of Diploma in Public Health N. M. Falkner—p. 318

Lancet, London

2 203 256 (Aug. 2) 1924

*Relationships of Diseases of Gallbladder to Secretory Functions of Stomach and Pancreas H. E. Griffiths—p. 203

Food Poisoning in Glasgow W. R. Wiseman and A. S. M. MacGregor—p. 208

*Origin of Squint Left Handedness and Stammer W. S. Inman—p. 211

*Debilitated Child C. W. Vining—p. 215

*Phosphate Ratio in Mental Disease W. Moodie and E. A. Boyd—p. 218

Case of Endocarditis Treated by Immuno Transfusion E. Wordley—p. 219

Gallbladder Disease and Functions of Stomach and Pancreas—With the close developmental origin and nervous association of the gallbladder, pancreas, pylorus and first and second parts of the duodenum Griffiths says it must be expected that in their physiologic actions and pathologic reactions they are closely allied. Clinically, this is perhaps, best exemplified by pylorospasm. Irritation of the mucous membrane of the gallbladder causes a reflex irritability of the vagus which is most marked by its action in the stomach,

where an increase in the amount and acidity of the gastric juice is produced, associated with relaxation of the pylorus and regurgitation from the duodenum. Griffiths, in association with Mackenzie Wallis, has investigated this problem. Experimentally and clinically, working on hyperchlorhydria and regurgitation, they found hyperchlorhydria associated with regurgitation in 90 per cent of cases of cholecystitis with or without the presence of gallstones. The duration of the inflammation and its degree are reflected in the intensity of the secretory deficit in the stomach. True hypochlorhydria occurring in inflammatory lesions of the gallbladder appears to be due to intercurrent disease, although it occurs regularly in advanced cases of carcinoma of the gallbladder. Speaking of pancreatitis the authors assert that acute pancreatitis is generally a sequel of pancreatic lymphangitis. Here there is already congestion of the pancreas and a tendency to vomit. With spasm of Oddi's sphincter, a reflex from the originally infected gallbladder, there is regurgitation of bile into the pancreatic duct. Vomiting or straining may raise the pressure of the bile to 1000 mm, and at this pressure some bleeding from the congested bile capillaries is bound to occur causing liberation of the ferment trypsin whose activity is intensified fourfold by the presence of bile. It is not absolutely necessary to have regurgitation of bile to cause hemorrhage; this may and does occur through sheer congestion. Hence it is evident that when infection occurs in the gallbladder a train is fired which always lights gastric fireworks and may end in a pancreatic explosion.

Squint, Left Handedness and Stammer—The points made by Inman are first, that these conditions, hitherto regarded as separate and unrelated, appear to be determined by defects in the personality as a whole and secondly, that the emotional difficulties of the child in meeting social demands have an importance which has till now been hidden from all save the psychiatrist.

Debilitated Child—Problems in connection with the debilitated child are discussed by Vining. The histories and physical abnormalities of these children are examined, and the frequency with which the same type of sign and symptom occurs is pointed out. It is suggested that the signs and symptoms are due to two main factors, the one nutritional and the other toxic, the child's tonelessness being due to the former and many of the symptoms to the latter. The nutritional factor is said to be due to a long-standing dietetic defect, together with the results of a chronic intestinal dyspepsia, while the toxic factor is believed to be due to the absorption of toxins from the throat and bowel emphasis, however, being placed on the latter as the probably more important source. It is suggested that the unhealthy throat is secondary to the general tissue cell defect brought by the nutritional factor. The relationship of tuberculosis, nervous disorder, and rheumatism to the debilitated state is examined. That the debility of these children is in the large majority of cases not due to tuberculosis is insisted on, although the possibility of strictly localized tuberculous infection in some group of glands cannot be altogether denied. It is believed that in cases in which such an infection exists that the infection is secondary to the preceding lowering of resistance and tone. A plea is put forward that the nervousness and nervous disorders of these children is secondary to the nutritional defect of the nerve cell and its irritation by toxins. Evidence is given to show that the rheumatic infection of childhood is in most cases ingrafted upon a preceding defect in health, which on analysis proves to be similar to the defects in health shown by the debilitated child, and it is suggested that in the prophylaxis and control of the rheumatic diseases the child's health in its earliest years is of the first importance, and emphasis is again laid upon the great importance of a well balanced diet and the avoidance of chronic intestinal dyspepsia.

Phosphate Ratio in Mental Disease—Three main conclusions are arrived at by Moodie and Boyd from an analysis of their results. (1) There is a definite type of confusional insanity which always shows the "acidosis reaction." This occurs at all ages, and the prognosis is usually good. (2) The numerical value of the phosphate ratio remains very constant for each case during the confused period. (3) An "acidosis

reaction" is not uncommon in excited states, but this does not apply to manic depressives. The phosphate ratio may, therefore, prove to be a valuable aid to prognosis, and we venture to submit these preliminary results in the hope that others may take up the work and that in this way a large mass of data may be collected. Several methods of combating the acidosis as a therapeutic measure have been devised, but it is, as yet, too early to express any definite opinion as to their efficacy.

2 257 306 (Aug 9) 1924

- Progress and Prospects in Chemotherapy H H Dale—p 257
*Gastric Function Before and After Gastrojejunostomy T G D Bonar—p 261
*Changes in Polarity of Fetus A L McIlroy and D Leverkus—p 267
*Multiple Abortive Cases of Lethargic Encephalitis C O Stallybrass and A S McNeil—p 271
Five Cases of Epidemic Pleurisy E I Lloyd—p 272
*Case of Hernia of Ovary W H Simmons—p 272
Treatment of Hemorrhoids by Pitch Taken Internally H W Webber—p 272
Case of Rupture of Muscular Belly of Biceps Brachii Due to Direct Violence G A Mason—p 273

Gastric Function Before and After Gastrojejunostomy—Several findings made by Bonar may be emphasized. Gastrojejunostomy allows the stomach to empty more quickly than usual (except in some few cases of duodenal ulcer). The meal leaves via the stoma and in only a very few cases via the pylorus as well. Particularly is the rate of emptying increased in cases of pyloric stenosis whether due to ulcer or growth, and this is very marked in cases of partial gastrectomy with gastrojejunostomy, where the meal passes at once into the jejunum. Gastrojejunostomy in cases of gastric ulcer causes a reduction in the free hydrochloric acid value, but the total acidity remains much as before. Gastrojejunostomy in cases of pyloric ulcer does not alter to any material extent the curve—a hyperchlorhydria still exists. In cases of ulcers with high acidities gastrojejunostomy does not cause to any extent a reduction of the acidity. In cases of carcinoma of the stomach gastrojejunostomy works in much the same way as in gastric and pyloric ulcers, depending on whether a gastrectomy has been carried out at the same time or not. Gastrojejunostomy is only indicated in cases of pyloric stenosis to act mechanically in providing an outlet for food. It relieves the pain caused by ulcer, but does not reduce acidity by allowing the entrance of bile into the stomach in cases of high acid-producing ulcers. There is a tendency for the formation of gastrojejunal or jejunal ulcers (three cases in 100 in Bonar's series) after gastrojejunostomy in cases with high acidity. Medical treatment will be required in all cases when a gastrojejunostomy has been performed in an attempt to reduce high acidity and to prevent gastrojejunal ulcers. Gastrojejunostomy in pyloric and duodenal ulcers apparently does not cause a release from the pylorospasm, and even though bile enters the stomach in greater quantities than before operation it is not sufficient to cause a reduction in the acidity to a marked extent.

Changes in Polarity of Fetus—The results of the investigations made by McIlroy and Leverkus show the value and importance of antenatal work. This investigation has not clearly disclosed the factors which influence pelvic presentations. Deformities of the fetus can be eliminated to a large extent as only one case of hydrocephalus was observed. The length and weight of the fetus, or the length of the umbilical cord, have been shown to be of little value as determinant factors in spontaneous version or in the prevention of version. Excessive liquor amni may be a factor, but, as the percentage of cases was small much importance cannot be given to it. Twins, for their better accommodation, have a tendency for one fetus to occupy the lower portion of the uterus with its pelvic pole. The occurrence of pelvic deliveries is frequently due to the premature onset of labor. Deformities of the pelvis are not a marked factor as only two were found in thirty-three pelvic deliveries. Other cases of pelvic contraction corresponded in frequency with those found in the control cases. There were twenty-one cases of induction of labor, mainly for fetal and pelvic disproportion or for cardiac and pulmonary diseases, eight in primigravidae and thirteen in multiparae. With two exceptions the disproportion cases resulted in head deliveries.

While abnormal presentations can, in some cases, be assigned to specific causes, no reason can be ascribed for the vast majority.

Multiple Cases of Encephalitis—Multiple cases of encephalitis in one house are very rare. Stallybrass and McNeil report several such instances. In one household four cases which were regarded as encephalitis occurred, in another three cases affecting three generations, and in a third household the father and son-in-law were affected. In the first two instances attention was directed to the household through the occurrence of one well-marked case. On inquiry, other and preceding cases came to light for which medical advice was not sought. In all instances, however, the occurrence of nystagmus (in eight of nine cases) or other focal signs points to the sickness from which they had been suffering as having also been encephalitis.

Hernia of Ovary in Child—Simmons reports the case of a girl aged 3 who had a small lump in the groin for about a year. On examination a movable oval tumor, about half an inch in length and a quarter of an inch in width, was felt at about the position of the right external ring. There was little or no sensibility to be demonstrated. It rolled easily under the skin, but could not be moved over the deep structures. There appeared to be a slight impulse on crying. At operation the tumor proved to be the ovary.

2 307 360 (Aug 16) 1924

- Recovery Process in Isolated Muscle A V Hill—p 307
*Epinephrin Treatment of Stokes-Adams Attacks J Parkinson and C W C Bain—p 311
Mental Defect and Mental Degeneracy in Rural Area G K Bowes—p 313
Blindness and Other Ocular Defects Due to Nasal Disease G W Dawson—p 318
*Early Pericardotomy in Treatment of Pericarditis R Brooke—p 319
Treatment of Epilepsy with Dialacetin S H Hall—p 320
*Traumatic Gangrene of Foot Complicating Fractured Fibula J B G Muir—p 321
*New Form of Suture Material D McIntyre—p 322
Development of Auricle on Second Branchial Cleft S Mort—p 322

Epinephrin in Stokes-Adams Disease—In the case described by Parkinson and Bain, there appears to have been an acute lesion of the myocardium involving the auriculoventricular bundle, with a rapid onset of heart block, and a period of complete dissociation followed by a more gradual recovery of conduction. Stokes-Adams attacks occurred in all three phases, but much the greater number took place during recovery of conduction. Opportunity was therefore afforded for studying the action of epinephrin both when the block was partial and when it was complete. On the twelve occasions on which it was used with one doubtful exception, it abolished the attacks within three minutes, and freedom from attacks was maintained from two to forty-eight hours from the time of injection. On four recorded occasions when partial block was present, the auricular and ventricular rates both increased to 120 and normal auriculoventricular sequence was restored. When complete block was present and the ventricular rate was slow this was increased to about 60, but the block remained complete. On one occasion, when the ventricular rate was already 60 before the injection, no increase in rate took place.

Pericardotomy for Pericarditis—Thirty-six cases of pyopericarditis secondary to osteomyelitis have been recorded in which drainage of the pericardium was performed. Recovery after operation took place in two instances only. In both these cases the primary disease of bone was operated on at a comparatively early stage, and the pericardium was drained before the effusion had become purulent.

Traumatic Gangrene of Foot—In Muir's case the gangrene was caused by a wound in the first part of the posterior tibial artery, above the origin of the peroneal branch. The proximal part of the vessel contained an organizing clot which had obviously extended back to the division of the popliteal. At the seat of the fracture the anterior tibial was also injured. This lesion seemed to be more of a bruise which had caused rupture of the inner coat, and the proximal portion of the vessel contained clot. Section of each vessel showed no arterial disease the lumens of each containing organizing thrombi.

Catgut and Silk Combined Suture Material—The material described by McIntyre consists of a combination of catgut and silk. The catgut is hardened to twenty-day muscle duration, and forms the greater bulk of the suture. Two or more strands of very fine silk are incorporated in the surface. The silk on the surface makes the material easy to handle and eliminates slipping of the knot. The bulk of the suture is absorbed, but the fine strands of silk remain, and so variations in the rate of absorption of the catgut do not constitute a danger.

Annales des Maladies Veneriennes, Paris

19 481 560 (July) 1924

- Pustulo Ulcerating Balanitis L. M. Prutner and Rietman —p. 481
Comparative Study of Dold's Test G. Cornaz —p. 488
*Resistance Reaction in Syphilis H. Gougerot and P. Fernet —p. 502
Treatment of Phagedena in Syphilis Carle —p. 506
Renal Resistance to Arspenamin E. Orphanides —p. 510
Chancroid in Natives of Algeria Montpellier and Benzecri —p. 514
Disinfection in Urology Catzeff —p. 519

Resistance Reaction in Syphilis—Gougerot and Fernet report a case of syphilis in which arspenamin was not only ineffectual but each of the four injections was followed by exacerbation of the papular eruption. This testified to the local struggle in each papule between the spirochetes and the arsenic. This reaction, which they call *reaction de resistance* is caused they say, by excitation of the parasites which resist and secrete more toxins. Further factors are the destruction of some of them the bacteriolysis inducing sensitization, and the stimulation although inadequate of the tissues to a defensive reaction. As the spirochete is not destroyed, the papule is still active and the eruption keeps progressing. It differs from Herxheimer's reaction in that it is a reaction of resistance on the part of the bacteria and of the tissues. Treatment with bismuth in the case described arrested the local reaction.

Archives des Maladies de l'App. Digestif, Paris

14 455 550 (June) 1924

- *Idiopathic Dilatation of Esophagus R. Gregoire —p. 455
*Electrotherapy in Constipation L. Delherm and A. Laquerriere —p. 470

Idiopathic Dilatation of the Esophagus—Gregoire recalls that only the tracheal and thoracic segments of the esophagus are involved, the lower limit of the dilatation corresponding to the esophageal opening in the diaphragm. An operation on this part of the esophagus may be performed by a combined technic through chest and abdomen, avoiding the pleura and peritoneum.

Electrotherapy in Constipation—Delherm and Laquerriere consider electrotherapy as most advisable in chronic constipation, explaining its action not as a purgative but by functional reeducation of the intestine. Various combinations with radiotherapy and diathermy are indicated in constipation associated with asthenia, painful adhesions, bladder spasms, fissure or hemorrhoids, and in constipation connected with gynecologic or prostatic affections.

Bulletin de l'Academie de Medecine, Paris

92 943 966 (July 29) 1924

- Determination of Glycolytic Insufficiency C. Achard —p. 949
*Transient Arrest of Heart C. Achard and J. Thiers —p. 952
*Vaccine Therapy in Empyema G. Vallet and A. Auge —p. 958
Relief in Monocular and Stereoscopic Vision J. H. Jarnier —p. 962

Röntgen Kinematography of Effect on the Heart of the Oculocardiac Reflex—Achard and Thiers report a case of diphtheric paralysis, in which the oculocardiac reflex from compression of the eyeball arrested the heart action completely for two or three seconds. The image of the heart was recorded with a kinematograph. The slight bradycardia from which the patient suffered permanently and the arrest of the heart are explained by paralysis of a sympathetic center.

Vaccine Therapy in Empyema—Vallet and Auge observed twelve patients with empyema six were treated with an autogenous vaccine. A fatal issue occurred in four cases, in which vaccine therapy was not employed three after operative intervention. All the six patients treated with vaccines recovered.

Gynecologie et Obstetrique, Paris

10 180 (July) 1924

- Early Cancer in Adenoma of Uterine Cervix H. Hartmann et al. —p. 1
*Intestinal Ptoisis and Childbirth J. Okinczev —p. 8
*Glycogen in Fetus and in Placenta R. Clogne et al. —p. 23
Ligation in Treatment of Uterine Cancer T. Asteriades —p. 25
Kielhnd's Forceps G. Barbaro —p. 36

Enteroptosis and Childbirth—Okinczev's opinion is that a normal pregnancy does not produce splanchnoptosis. But ptosis and intestinal stasis may be a cause of sterility, owing to relaxation of organs and retrodeviation of the uterus. An important part is attributed to chronic appendicitis in childhood and in adolescence, the colon bacillus infection causing enterocolitis with toxic action on the nervous apparatus of the bowel with dynamic disturbance in the intestines, their relaxation and atony. While an appendectomy alone may be indicated in children, it may be necessary in adults to combine this operation with colopexy and sigmoidostomy to relieve the intestinal stasis, and to insure normal conditions in pregnancy.

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Journal d'Urologie Medicale et Chirurgicale, Paris

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Policlinico, Rome

31 1001 1032 (Aug. 4) 1924

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Foreign Bodies in Esophagus P. Misotti —p. 1007
Foreign Body in Stomach F. Trojano —p. 1008

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31 1065 1094 (Aug. 18) 1924

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Prevention of Neurosyphilis G. Pellacini —p. 1070

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31 417 460 (Aug. 1) 1924 Medical Section

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Rivista di Clinica Pediatrica, Florence

22 505 576 (Aug.) 1924

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Recurrence of Scarlet Fever E. Boschi—p. 548

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Archivos Latino-Amer de Pediatria, Buenos Aires

18 241 336 (June) 1924

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Brazil-Medico, Rio de Janeiro

2 67 82 (Aug. 2) 1924

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2 83 106 (Aug. 9) 1924

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Gaceta Medica de Caracas

31 161 176 (June 15) 1924

*Cancer of Uterine Cervix R. Soto G.—p. 161 Idem E. Razetti—

p. 167 Idem Rivas Morales—p. 168

Medical Geography of Uruguay E. Oxford—p. 170 Cont n

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Lisboa Medica, Lisbon

1 65 136 1924

Infant Feeding with Moro's Modification of Butter Flour Mixture L.

de Castro Freire—p. 65 Conc n p. 182

Platelets and Megacaryocytes in Chronic Granulocytic Leukemia J. J.

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Amputation of the Breast—Palmeirim states that at the Lisbon surgical clinic the woman's arm is fastened to the headboard of the bed after amputation of the mamma. After the first twenty-four hours the arm is released and the patient is encouraged to move the arm freely to the maximum which can be then done without strain. This early exercising of the arm has been applied since 1913 in 116 cases and the parts have always healed elastic and movable on the deeper planes. He gives illustrations of one case, taken at the forty-eighth hour.

1 137 208 1924

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1 263 328 1924

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1 329 376 1924

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Catgut and Silk Combined Suture Material.—The material described by McIntyre consists of a combination of catgut and silk. The catgut is hardened to twenty-day muscle duration, and forms the greater bulk of the suture. Two or more strands of very fine silk are incorporated in the surface. The silk on the surface makes the material easy to handle and eliminates slipping of the knot. The bulk of the suture is absorbed, but the fine strands of silk remain, and so variations in the rate of absorption of the catgut do not constitute a danger.

Annales des Maladies Veneriennes, Paris

19 481 560 (July) 1924

- Pustulo Ulcerating Balanitis L. M. Prutier and Rietman—p. 481
Comparative Study of Dold's Test G. Cornaz—p. 488
*Resistance Reaction in Syphilis H. Gougerot and P. Fernet—p. 502
Treatment of Phagedena in Syphilites Carle—p. 506
Racial Resistance to Arspenamin E. Orphanides—p. 510
Chancroid in Natives of Algeria Montpellier and Benzecri—p. 514
Disinfection in Urology Catzeffs—p. 519

Resistance Reaction in Syphilis—Gougerot and Fernet report a case of syphilis in which arsenphenamin was not only ineffectual but each of the four injections was followed by exacerbation of the papular eruption. This testified to the local struggle in each papule between the spirochetes and the arsenic. This reaction, which they call *reaction de resistance* is caused they say, by excitation of the parasites which resist and secrete more toxins. Further factors are the destruction of some of them, the bacteriolysis inducing sensitization, and the stimulation, although inadequate, of the tissues to a defensive reaction. As the spirochete is not destroyed the papule is still active and the eruption keeps progressing. It differs from Herxheimer's reaction in that it is a reaction of resistance on the part of the bacteria and of the tissues. Treatment with bismuth in the case described arrested the local reaction.

Archives des Maladies de l'App Digestif, Paris

14 455 550 (June) 1924

- *Idiopathic Dilatation of Esophagus R. Gregoire—p. 455
*Electrotherapy in Constipation L. Delherm and A. Laquerriere—p. 470

Idiopathic Dilatation of the Esophagus—Gregoire recalls that only the tracheal and thoracic segments of the esophagus are involved, the lower limit of the dilatation corresponding to the esophageal opening in the diaphragm. An operation on this part of the esophagus may be performed by a combined technic through chest and abdomen, avoiding the pleura and peritoneum.

Electrotherapy in Constipation—Delherm and Laquerriere consider electrotherapy as most advisable in chronic constipation, explaining its action not as a purgative, but by functional recudication of the intestine. Various combinations with radiotherapy and diathermy are indicated in constipation associated with asthenia, painful adhesions, bladder spasms, fissure or hemorrhoids and in constipation connected with gynecologic or prostatic affections.

Bulletin de l'Academie de Medecine, Paris

92 943 966 (July 29) 1924

- Determination of Glycolytic Insufficiency C. Achard—p. 940
*Transient Arrest of Heart C. Achard and J. Thiers—p. 952
*Vaccine Therapy in Empyema G. Vallet and A. Auge—p. 958
Relief in Monocular and Stereoscopic Vision J. H. Jarnier—p. 962

Röntgen Kinematography of Effect on the Heart of the Oculocardiac Reflex—Achard and Thiers report a case of diphtheric paralysis, in which the oculocardiac reflex from compression of the eyeball arrested the heart action completely for two or three seconds. The image of the heart was recorded with a kinematograph. The slight bradycardia from which the patient suffered permanently, and the arrest of the heart are explained by paralysis of a sympathetic center.

Vaccine Therapy in Empyema—Vallet and Auge observed twelve patients with empyema, six were treated with an autogenous vaccine. A fatal issue occurred in four cases, in which vaccine therapy was not employed, three after operative intervention. All the six patients treated with vaccines recovered.

Gynecologie et Obstetrique, Paris

10 180 (July) 1924

- Early Cancer in Adenoma of Uterine Cervix H. Hartmann et al—p. 1
*Intestinal Ptois and Childbirth J. Okmeczyc—p. 8
*Glycogen in Fetus and in Placenta R. Clogne et al—p. 23
Ligation in Treatment of Uterine Cancer T. Asteriades—p. 25
Kieffland's Forceps G. Barbaro—p. 36

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Rivista di Clinica Pediatrica, Florence

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Gaceta Medica de Caracas

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Prensa Medica Argentina, Buenos Aires

11 161 196 (July 20) 1924

- *Gastric Ulcers with Achylia C Bonorino Udaondo—p 161
- Training for Social Service Visitors Carbonell—p 164
- *Tar Cancer in Rabbits A H Roffo—p 168
- Etiology of Dysmenorrhea J E Massun and E E Anselmi—p 179
- Arterial Hypertension H Vaquez—p 186

Gastric Ulcer with Achylia—Bonorino Udaondo has encountered fifteen cases of gastric ulcer with complete achylia. It was usually accompanied by arterial hypotension, bradycardia, general asthenia or chronic constipation, and in two of the cases by phosphaturia. The symptoms from the ulcer were generally milder than in cases with normal or excessive acidity. The chemistry of the stomach did not change after the ulcer had healed under medical or surgical measures confirming its constitutional character. Sippy treatment is of course irrational and dangerous in these achylia cases, but he always had good results with small doses of sodium chlorid and sodium citrate or phosphate, associated with sedatives and dieting.

Tar Cancer in Rabbits—Roffo reports that well developed cancers were obtained in three of the six rabbits treated with tar. The course of the malignant transformation of the tissues under the tar can be traced in his fourteen photomicrograms.

11 197 224 (July 30) 1924

- Improved Forceps Llamas Massini—p 197
- *Refractometry in Malignant Disease A H Roffo—p 200
- Revision of Anatomy of Aponeuroses of Leg Brichetto Brian—p 203
- Tracheocele from Congenital Syphilis D S Cuneo—p 214

Refractometry in Cancer—Roffo's tables show 135018 as the average refractometric index of the blood serum in thirty-nine cancer patients (proteins 8,293), while the average in thirty-nine other patients free from cancer, was 134898 (proteins, 7,523).

Semana Medica, Buenos Aires

2 281 348 (Aug 7) 1924

- *Functional Test of the Kidneys Roque A Izzo—p 281
- Decompressive Trephining R E Donovan—p 289
- *The Blood Pressure in Aortic Insufficiency J R Goyena—p 298
- *Cephaloplegic Syndrome in Children J B Ormaechea—p 299
- *Trachoma in Argentina A Barbiéri—p 303
- *Traumatic Meningo-Encephalitis J E Olmos—p 313
- Occupational Injuries J C Belbey—p 318
- Recurring Fungous Tumor in Conjunctiva J Lijó Pavia—p 326
- Phlorizin Glycosuria in Diagnosis of Pregnancy R Mestre—p 331
- Stenosis of Esophagus and Radium Treatment C Heuser—p 333

Functional Tests of the Kidneys—Izzo applied the phenol-sulphonephthalein test to thirty eight patients by both the intravenous and the intramuscular routes. With healthy kidneys the findings are parallel unless there is delay in absorption of the dye from the muscle. This is liable to occur under various conditions, and hence the intramuscular route is not dependable unless the outcome by both routes is alike. His experience confirms that 70 per cent of the dye eliminated is the limit for good functioning, below 60 per cent the function is bad, and between 60 and 70 per cent testifies to slight insufficiency.

The Differential Tension in Aortic Insufficiency—Goyena warns to suspect aortic insufficiency whenever, in the absence of bradycardia, the difference between the systolic and the diastolic pressure is greater than normal. The coexistence of other valvular lesions and weakness of the heart action may modify the findings, but not enough to affect materially the characteristic curve. The highest differences are found in Hodgson's disease.

Cephaloplegia in Children—A child, aged 2, and, a year later, his sister, aged 23 months, developed cephaloplegia after a few days of fever and diarrhea. The paralysis of the muscles of the neck came on suddenly and lasted for ten days, after which recovery was complete. Ormaechea agrees with Figueira (who has published eleven cases at Rio de Janeiro) and Leite Lage (six cases at Lisbon) that the syndrome is a special and abortive form of epidemic poliomyelitis. The cases have always been observed at periods when poliomyelitis was prevailing. He cites further Escardo's eleven cases of facial paralysis in children which Escardo ascribed to

poliomyelitis, although other signs of the disease were lacking in several. In one child the facial paralysis was accompanied with cephaloplegia and paralysis of the legs and left arm. Ormaechea thinks we must accept a cephaloplegic form of mild epidemic poliomyelitis.

Trachoma in Argentina—This is the official report of the committee of five appointed by the government to make a survey of the incidence of trachoma. They found it scattered throughout the entire country but with only a few dangerous foci. The disease is always imported, and stricter control of immigration, education of the public, and treatment to stamp out the foci are advocated.

Trauma of the Brain—Olmos gives an illustrated description of two cases to show the fine results obtainable, even with extensive meningo-encephalitis, when treated promptly with vaccines, serotherapy, and a silver salt.

Archiv für klinische Chirurgie, Berlin

130 1426 (Aug 7) 1924

- Elasticity in Knee Joint Katzenstein and Tschier—p 1
- Dislocation of Wrist H Landau—p 31
- Rust's Pseudo Erysipelas Tsau—p 36
- Classification of Cancerous Gouters H Hueck—p 45
- Fracture Hyperemia in Callus Production B Martin—p 62
- Operative Treatment of Angina Pectoris H Florcken—p 68
- *Coagulation of Blood Under Irradiation F Bernhardt—p 93
- Lymphogranulomatosis of Stomach H Steindl—p 110
- Resection of Vas Deferens H Steindl—p 117
- Adamantinoma Recurs After Forty Five Years Porzelt—p 142
- Blood Changes with Recent Fracture Hartmann—p 151
- Appendicitis as Part of Extensive Syndrome Mueller—p 157
- Parallel Clinical and Histologic Findings in Gout Hueck—p 178
- The Thyroid in a Gouty Free Region Buchner—p 199
- Classification of Gouters H Burkle-de la Camp—p 207
- Local Spasm of Segment of Vessel G Magnus—p 237
- Sarcoma of Intestines Mirotsowzen and Sacharon—p 256
- Operative Treatment of Hip Joint Tuberculosis Antelawa—p 275
- Chemical Processes in Healing of Fractures E Herrmann—p 284
- Epinephrin in Blood with Spontaneous Gangrene Ornitsky—p 293
- Resection of Stomach and Chemistry Thereafter Smidt—p 307
- Tardy Injury of Nerve After Thyroidectomy T Antoine—p 323
- Perirenal Cysts of Hemorrhagic Origin Hildebrand—p 337
- Relics of Vitelline Duct in Tumor in Appendix Region Usadel—p 348
- Blood Pressure in Intraspinal Anesthesia Schulf and Ziegner—p 352
- Mechanics of Vessels and Healing of Wounds Rieder—p 360
- Prevalence of Capillary Cholangitis G Aiello—p 415
- Aneurysm of Abnormal Axillary Artery Gesselitsch—p 422

Operative Treatment of Angina Pectoris and Asthma—Florcken's table shows that about 75 per cent were clinically cured of the twenty seven patients with angina pectoris treated by resection of the sympathetic in the neck on one or both sides. The list includes five cases published by Coffey and Brown and three of Florcken's own cases. By temporarily severing the sternocleidomastoid muscle (De Quervain), ample access is obtained. He thinks it is important to remove the thoracic ganglion. The mortality to date has been about 20 per cent. In addition he gives the details of four cases of asthma treated in the same way with no return of the asthma to date, the longest interval five months, except one attack during intercurrent influenza in one case, and one attack the seventh week in another.

Coagulation of the Blood Under Influence of Roentgen-Ray Exposures of Spleen—Bernhardt asserts that the spleen cannot be the central organ for coagulation of blood, as some affirm, because she obtained the same results from roentgen exposures of the spleen region in ten splenectomized subjects as in others irradiated. About a third of all the irradiated responded with acceleration of the clotting time and about a third with retarding of the clotting time, while the others showed no change either way. This response seemed to be individually characteristic, returning the same each time.

Resection of Vas Deferens—This communication from Hocheneggs service confirms that the Steinach operation has an unmistakable effect in a general stimulating and tonic action on the entire organism. But this effect is transient, and the complications which are liable to follow, such as rapid loss of strength and an unfavorable influence on the central nervous system impose extreme caution in its application. Steindl performed the operation in several cases of inoperable cancer, hoping thus to rouse the defensive forces. The results were so good that he since has applied it to

supplement the extirpation of cancers in the rectum, to help the organism in its task of recuperation, but was unable to detect any special influence from it. No benefit was apparent in a case of Parkinson's disease and one of parkinsonian symptoms after encephalitis, nor in prostatic retention of urine. A permanent action was not obtained in any instance.

Spasm of Segment of Vessel—Magnus describes a micro-manipulator with which he has been able to take serial photographs of frog arteries and veins and also of capillaries in human subjects, all confirming the assumption that the vessels react to injury by contraction of the segment involved. Thrombosis was never observed, the vessel arrests hemorrhage by contracting.

Tuberculous Hip Joint Disease—Antelawa relates that 43.5 per cent of 179 patients with tuberculous processes in the hip joint were given operative treatment, and 76 per cent of the twenty-five recently reexamined were entirely cured, the interval since ranging from four to twenty-five years.

Deutsche medizinische Wochenschrift, Berlin

50 1071 1104 (Aug 8) 1924

- *Histology of Hegar's Sign S Sellheim—p 1071
- *Experimental Prevention of Syphilis W Kollé—p 1074
- *Silver Nitrate Reaction F Kromeke—p 1077
- *Platelets and Endocrine Glands N Henning—p 1078
- *Sedimentation of Irradiated Corpuscles C Jaller—p 1080
- *Atrophy of the Liver A Muhling—p 1081
- *Traumatic Pseudocyst of Omentum H Rinne—p 1083
- *Phylogenesis of Corpus Luteum J Hett—p 1084
- *Germs and Ferments of Small Intestine L Bogendorfer—p 1085
- *Epidemic Encephalitis Simulating Diabetic Coma C Moewes—p 1085
- *Psychopathology of Sleep N Costa—p 1086
- *Intravenous Injections of Phlorizin M R Bonsmann—p 1087
- *Survey on Physical Diagnosis H Rautmann—p 1088
- *Nostrums J Schwalbe—p 1090
- *Medicine in Russia N Semashko—p 1090

Histology of Hegar's Sign—Sellheim found in collaboration with others that the compressibility of the lower segment of the uterus in early pregnancy is due to the freedom with which the growing muscle fibers move. He also believes in an active motion. Similar changes in the vagina, and even in the abdominal wall, account for the feeling of having nothing between the fingers in bimanual palpation.

Silver Nitrate Reaction—Kromeke considers the Lange and Heuer silver nitrate test as simple precipitation of globulins. A quartz lamp is preferable to daylight. The test may indicate the intensity of destruction of tissues but cannot replace the Wassermann reaction.

Platelets and Endocrine Glands—Henning observed a hemorrhagic diathesis with thrombopenia in a woman after childbirth. The condition subsided at the beginning of a second pregnancy, but returned after childbirth, and proved fatal. He confirms the marked decrease of blood platelets in the first days of menstruation. Venous stasis of the forearm induced cutaneous hemorrhages on such days.

Intravenous Injections of Phlorizin—Bonsmann observed two instances of hematuria after intravenous injection of phlorizin.

Deutsche Zeitschrift für Chirurgie, Leipzig

186 289 425 (July) 1924

- Supracondylar Fracture of Humerus Lubinus—p 289
- Hallux Varus Etiology and Treatment Grueter—p 351
- Papillomatous Tumors of Upper Urinary Tract Schaudig—p 358
- *Congenital Metatarsus Varus Mettenleiter—p 369
- *Enlargement of Carotid Gland A Birman—p 384
- *Cyst in Crucial Ligament in Knee P Caan—p 403
- *Putrid Infection of Stomach E Bircher—p 409
- Fracture of Scapoid Bone F Eid—p 422

Congenital Metatarsus Varus and Adductus—Mettenleiter comments on the fact that while the girl, aged 18, had metatarsus varus, her brother, a year or two younger, had metatarsus adductus. The anomaly was bilateral in both and did not cause pain. He emphasizes the importance of seeking to correct the deformity from the very first days after birth, manipulating the foot to straighten it, with even pressure, and training the mother to continue the correcting exercises. There is no hope of the child's outgrowing the deformity. If not seen until the child is older, correction has to be done

under general anesthesia, and the correction maintained with plaster for six weeks. The after-treatment is important, the same as with clubfoot.

Tumor of Intercarotid Gland—Birman tabulates the details of a series bringing to ninety-five the cases of tumors of the carotid gland on record. No benefit has been realized with radiotherapy. Only 18 per cent were cured in the operative cases, and the operative mortality was 29 per cent. Even in the malignant cases, metastasis at a distance has never been observed, but hemiplegia followed the operation in 25 per cent of the cases in which the carotid had been resected, and 10 per cent died from aspiration pneumonia. In the personal case described, the hemiplegia gradually subsided in the man, aged 54.

Putrid Infection of the Stomach and Upper Small Intestine—Two of Bircher's four cases were acute and two chronic cases. They teach anew the importance of a prompt laparotomy in every case that suggests irritation of the peritoneum. In another case a phlegmonous ulcerative enteritis developed four years after an apparently successful gastro-enterostomy. The onset was insidious until suddenly a stormy phase developed with blood in vomit and stools, and the young woman succumbed to peritonitis five days after resection of the phlegmonous bowel. Necropsy revealed a second segment involved, a long stretch of normal intestine intervening.

Klinische Wochenschrift, Berlin

3 1473 1520 (Aug 12) 1924

- Arteriosclerosis J G Monckeberg—p 1473 Cont'd
- *Insulin in Mild Diabetes W Redisch—p 1478
- *Distribution of Circulating Blood Cells K Ziegler—p 1481
- *Fluctuations in Leukocyte Count A Liebenstein—p 1482
- *The Bone Marrow in Pernicious Anemia I Zadek—p 1483
- *Functional Aphasia E Fassl—p 1487
- *Respiration of Surviving Tissues K Posener—p 1490
- *Leukopenia After Intracutaneous Injections Vollmer and Schmitz—p 1490
- *Psyche and Serum Calcium F Glaser—p 1492
- *Virulence of Streptococci S Joseph and G Sachs—p 1493
- *Hereditary Blood Structures F Bernstein—p 1495
- *Antagonism of Insulin and Epinephrin Csepai and Weiss—p 1497
- *Action of Lactic and Acetic Acid in Intestine W Catel—p 1497
- *Blackwater Fever in Therapeutic Malaria Schilling and Jossmann—p 1498
- *Tuxta Articular Nodules M Jessner—p 1499
- *The Thyroid and Thermoregulation Schenk—p 1502 Begun p 1454
- Instruments for Neurologic Examinations Tromner—p 1517
- Incompatible Mixtures H Wieland—p 1518
- League of Nations and Serodiagnosis of Syphilis Sachs—p 1518

Insulin in Mild Diabetes—Redisch recommends insulin treatment in light cases, they are the best subjects for substitution treatment. The "hypoglycemic intoxication" occurs also with normal blood sugar and is connected with changes of water metabolism, as he found with Raab.

Distribution of Circulating Blood Cells—Ziegler does not believe in changes of the erythrocyte or leukocyte counts from merely a different distribution of the cells in various parts of the body. Fluctuations are constantly occurring.

Fluctuations in Leukocyte Counts—Liebenstein counted the leukocytes in various positions of the body and also during rest. There were differences up to 2900 cells in the same individual. He found in eleven healthy subjects from 3,300 to 10,000 leukocytes per cubic millimeter.

The Bone Marrow in Pernicious Anemia—Zadek emphasizes the significance of increased urobilin in the feces as a sign of hemolysis. He found in the same patient red bone marrow during exacerbations and yellow marrow in the remissions. He claims that the blood may become absolutely normal in these phases. Even the size of the erythrocytes was normal for a while.

Functional Aphasia—Fassl examined two sisters, aged 17 and 15, with defective hearing. Their parents are deaf-mutes, and consequently the children's speech was neglected at the time when they most needed training. To make matters worse they were committed to an institution for deaf-mutes where they acquired the speech and habits of the deaf and dumb. The older sister improved after treatment. The younger sister did not care. He demands compulsory expert examination of children before sending them to such an institution and during their stay.

Respiration of Surviving Tissues—Posener examined the respiration and production of lactic acid by surviving papillomas, fibro-adenomas and adenoids. He found almost one molecule of lactic acid per molecule of oxygen intake. This indicates an intermediate position between cancer and normal tissues.

Mental Influencing of Calcium Content of the Blood Serum—Glaser was able to lower the calcium concentration of the serum in hypnosis by calming the patient (difference 2.16 mg per hundred cubic centimeters). Excitation increased the serum calcium.

Virulence of Streptococci—Joseph and Sachs used Ruge's and Philipps' methods for determination of the virulence of streptococci. The results were correct in 75 per cent of their forty patients with various septic processes. A second test did not always agree with the first.

Heredity of Blood Groups—Bernstein replaces the hypothesis of two independent pairs of genes by the hypothesis of three multiple allelomorphs.

Antagonism of Insulin and Epinephrin—Csepe and Weiss found a weaker reaction to epinephrin after injection of insulin. If they gave the patient carbohydrates, the reaction was less only when the glycemia was lowered.

Blackwater Fever in Therapeutic Malaria—Schilling and Jossmann observed a case of blackwater fever in a patient with general paralysis who had been inoculated in Berlin with tertian malaria.

Juxta-Articular Nodules—Jessner surveys the literature on the peculiar fibrous nodules situated usually symmetrically at the exterior side of large joints. Most of the cases have been described in the tropics only a few in Europe. De Quervain's opinion as to the syphilitic origin seems to be correct.

Medizinische Klinik, Berlin

20 1097 1128 (Aug. 10) 1924

- *Chemotherapy with Bismuth W. Kolle—p. 1097
- *Bone Fractures and Pseudarthroses M. Zondek—p. 1104
- *Improved Breast Feeding A. Singer—p. 1106
- Smallpox, Chickenpox and Syphilis Esau—p. 1109
- Pathogenesis of Diabetes Insipidus G. v. Gerlőczy—p. 1110
- Treatment of Arspenamin Dermatitis H. Sieben—p. 1111
- Knotting Threads with Instruments F. Weigl—p. 1113
- Milk Mixtures for Infants W. Schmitt—p. 1118

Chemotherapy with Bismuth—Kolle reports on his chemotherapeutic studies with bismuth compounds. They have no effect on experimental trypanosomiasis and little on recurrences. Intravenous injections show no therapeutic index worth speaking of. Only the intramuscular route is valuable—even with practically insoluble compounds, such as bismuth carbonate. He corrects his former opinion on the inefficiency of mercury in syphilis of rabbits. It was based on the results of intravenous injections. Intramuscular injections of mercury and bismuth have a distinct inhibitory action on the development of spirochetes. He believes that arspenamin has a direct action.

Bone Fractures and Pseudarthroses—Zondek discusses the practical consequences of his experiments. The healed fracture is not strong enough to support the weight of the body, and a gradual shortening of the extremity results. Removal of bone splinters is a cause of pseudarthrosis. If they are left in place they stimulate healing and are resorbed later. Lack of fixation of a pseudarthrosis leads to local inflammation and may result in consolidation of the fracture.

Improved Breast Feeding—Singer points to some disadvantages of breast feeding. Some infants suffer from meteorism and have greenish stools with mucus. Addition of from 10 to 15 gm of undiluted cow's milk after every feeding, as recommended by Hecht, restores normal conditions. The author thinks that the cow's milk may act as shock treatment. Menstruation of the wetnurse causes frequent disturbances. It is of no use to force the baby to take the breast before and during the menstrual period. If it is done, the baby may suffer from dyspepsia which is in proportion to the menstrual derangement of the nurse. He also believes that a difference between the nurse's and the baby's blood group may have a pathologic significance.

Monatsschrift für Geb und Gynäkologie, Berlin

67 1 130 (Aug.) 1924 Dedicated to C. Menge

- *Papilloma Cystoma in Labium Majus C. Arns—p. 1
- *Formaldehyd Treatment of Chronic Endometritis Baureisen—p. 9
- *Roentgenotherapy in Female Genital Cancer R. Bretschneider—p. 15
- *Chorio Epithelioma in Broad Ligament L. Engelhorn—p. 25
- *Operative Treatment of Incontinence of Urine H. Eymmer—p. 33
- *Metabolism of Carbohydrates in Placenta Felix and Oettingen—p. 41
- *Formaldehyd Treatment of Sterility in Women Glaesche—p. 47
- *Trophoblast Cell Theory of Childbirth L. Handorn—p. 50
- *Puerperal Thrombosis of Portal Vein Linzenmeier—p. 59
- *Methods for Early Diagnosis of Pregnancy M. Neu—p. 63
- *Hemorrhage from Abnormal Regeneration of Endometrium Pankov—p. 71
- *Statistics of Eclampsia F. Sachsch—p. 77
- *Operation in Advanced Ectopic Pregnancy F. Schütz—p. 83
- *Research on Pregnancy Leukocytosis I. Schultze-Rhönhof—p. 93
- *Myasthenia Gravis and Ovarian Deficiency A. Wolff—p. 99
- *Tumors of Adnexa and Early Carcinoma P. Wolff—p. 106

Papilocystoma in Labium Majus—Arns describes a small tumor which represented a sweat gland dilated by obstruction of the duct and retention of the secretion. The tumor, which originated in the skin, proliferated and became a papilocystoma. It may be considered as a possible precursor of cancer and its removal is therefore indispensable.

Plastic Operation in Urethral Incontinence of Urine—Eymmer admits four causes of incontinence of urine. It may be a local defect, or of traumatic origin, caused frequently by a confinement, and a secondary muscular insufficiency. Or it may be of purely functional (psychic) origin or it may accompany disease of the brain or spinal cord, or spina bifida. Rarely it is due to local injury of the nerves of the bladder. A plastic operation (pyramidalis fasciæ) is indicated in traumatic cases and is almost invariably successful as well as in local injury of the nerve supply to the bladder. The treatment under other circumstances depends on the main disease.

Thrombosis of Portal Vein in Childbed—Linzenmeier observed a case of puerperal thrombosis of the portal vein with obstruction of the mesenteric vessels. These cases are usually complicated by hemorrhagic infarction in the intestine, gangrene, exudation of blood into the abdominal cavity, and peritonitis. A progressive anemia is symptomatic, but is sometimes mistaken for a pernicious anemia. In ninety-one cases on record of a localized infarction of the intestine, resection was performed and eighteen patients recovered.

Myasthenia Gravis and the Genitalia—Wolff describes a case of myasthenia gravis pseudoparalytica, excessive lassitude, and exhaustion of muscles, simulating paralysis in a woman, aged 27 not long after her first childbirth. Aggravation of the symptoms occurred in the premenstrual period, and an improvement during the first two days of the menses. The disturbance may be attributed to a deficient endocrine ovarian secretion, and is not combined with any organic changes. Treatment with ovarian extract had surprising results. In cases associated with pregnancy an induced abortion is contraindicated, as delivery and lactation exert an unfavorable influence. It seems better to tide the patient through the critical period with ovarian treatment.

Munchener medizinische Wochenschrift, Munich

71 1085 1118 (Aug. 8) 1924

- *Problems of Syphilis L. Hauck—p. 1085
- *Treatment of Syphilis R. Griesbach and E. Meyerhoff—p. 1087
- *Surgery of Trifacial Neuralgia F. Hartel—p. 1089
- *Trifacial Neuralgia and the Sympathetic H. Pette—p. 1092
- *Treatment of Perforated Gastric Ulcer Steinthal—p. 1093
- *Treatment of Lysipieloid F. Franke—p. 1094
- *Architectonic Changes in Head of Femur W. Müller—p. 1095
- *Muscle Transplants in Paralysis of Legs E. Schepelmann—p. 1096
- *Toxicity of Stannous Hydride W. Vaubel—p. 1097
- *Significance of Stomach and Stool Examination F. Cramer—p. 1098
- *Rules and Fees for Bacteriologic Work Rimpau—p. 1101
- *Vocational Ability Tests Furst—p. 1101
- Concise

Problems of Syphilis—Hauck believes that all the drugs used in syphilis act only indirectly on the spirochetes. A dialyzed mixture of bismuth salt with an emulsion of organs kills spirochetes, while the bismuth alone in the dialyzed fluid is without action as Levaditi and Nicolau found. Arspenamin is by far superior in early cases. No other drug assures abortive treatment. Malaria treatment gives

good results not only in general paralysis but also in early syphilis with persisting changes in the cerebrospinal fluid. Yet it is questionable whether this treatment should be used in the early stages.

Surgery in Trifacial Neuralgia—Hartel reports 100 cases of trigeminal neuralgia treated with his technic of alcohol injections. He injects the whole gasserian ganglion in grave cases. Where this was possible, a permanent cure resulted. When the injection was only partial—especially with preservation of the sensibility of the cornea—recurrence was the rule in from six months to four years. Some of the patients were cured by reinjection. He gives some points on prevention of complications and after-care of the eye. None of his patients died, a record which compares quite favorably with the 11 per cent of mortality of the best surgeons with gasserectomy.

Trifacial Neuralgia and the Sympathetic—Pette publishes two cases of trifacial neuralgia following extirpation of the cervical sympathetic ganglions.

Architectonic Changes in Head of Femur—Müller continued Nussbaum's experiments on the production of necrosis of the head of the femur. Instead of ligating the blood vessels he dislocated the femur in anesthesia. The youngest animals showed no deep changes. The older ones developed necrosis. The lesions were less grave than in Perthes disease because the head of the femur in animals is not under a heavy strain as in human beings. One of his patients—22 years of age—developed the disease four years after a dislocation. The provoking cause was amputation of the other leg and subsequent strain on the affected side.

Wiener klinische Wochenschrift, Vienna

37 793 816 (Aug 14) 1924

- *Third Period of Labor H. Heidler—p 793
- *Paralysis After Hydrophobia Vaccination I. Schweinburg—p 797
- *Extra Intestinal Amebiasis Panayotaton—p 801
- Statistics on Tuberculosis Mayrhofer Grunbuehl—p 803
- Changes of Proteins in Diseases W. Berger—p 804 Cont n
- Phagocytosis by Reticulo Endothelium E. Ledofsky—p 808
- Surgical Experiences in United States H. Finsterer—p 808
- Sterility in Women J. Novak Supplement—p 112

Third Stage of Labor—If the placenta does not descend within half an hour, Heidler injects 300 c.c. of sterile physiologic sodium chlorid solution into the umbilical vein and, if necessary, repeats the injection twice at half hour intervals. If this is not successful, injections of pituitary extracts or ergot may be tried and, as a last resort, the placenta manually removed. This operation is not as dangerous as commonly assumed if done early, with all aseptic precautions, in a noninfected woman. If the operation is performed during fever in an infected woman or if the uterus is examined within a few days after the delivery, death is almost the rule.

Paralysis After Hydrophobia Vaccination—Schweinburg injected rabbits daily for fourteen days with emulsions of normal human brain or cord. Some of these animals died with symptoms of myelitis which were practically identical with those observed in man after preventive hydrophobia vaccination. He concludes that the paralysis after the vaccination is due to the lipoids injected. Hogyes' method, which requires the least amount of material, causes the smallest percentage of paralysis.

Extra-Intestinal Amebiasis—Panayotaton describes two cases of pulmonary amebiasis complicated with tuberculosis. The prognosis, in such cases, is serious.

Zeitschrift fur Tuberkulose, Leipzig

40 401-480 (July) 1924

- Kirchner's Works on Tuberculosis and Leprosy Möllers—p 401
- *Classification of Pulmonary Tuberculosis K. Turban—p 404
- Symmetry in Tuberculosis of Lungs and Larynx A. E. Mayer—p 412
- Elastic Fibers Under Climatic Therapy W. Vietz—p 416
- Wassermann's Reaction in Active Tuberculosis Kalcher and Sonnenfeld—p 420
- Artificial Pneumothorax in Tuberculosis Kogan—p 41
- *Syphilis in Sanatorium for the Tuberculous I. Koester and S. Amend—p 437
- Biologic Diagnosis in Tuberculosis Tegtmeyer—p 442
- Alizarin Test for Tuberculous Sputum Zuhlendorf—p 449

Classification of Chronic Tuberculosis—Turban suggests a classification of chronic pulmonary tuberculosis based on his

older classification but comprising the pathologic anatomy, the clinical and roentgen-ray findings, the immunity reaction, the stage, the form and the degree.

Syphilis in Sanatoriums for the Tuberculous—Kalcher and Sonnenfeld found syphilis in 3 per cent of the 638 tuberculous inmates of the Ambrock Sanatorium during 1923.

Zeitschrift fur urologische Chirurgie, Berlin

16 186 (Aug 11) 1924

- *Treatment of Recurring Papillomas A. Malavazos—p 1
- Urogenital Fistulas in Women T. Tavildarow—p 11
- *Muscle Tampon in Resection of Kidney A. Ciminata—p 37
- Large Myoma in Prostate A. Damski—p 47
- *Complications with Nephrectomy R. Fronstein—p 51
- Cystic Kidneys and Cystic Liver E. Kratzel en—p 70

Recurring Papillomas—Malavazos says that it is the routine practice in the urologic clinic at Vienna, with which he is connected to insist on the patient's being reexamined every one to three months after electrocoagulation to remove papillomas in the bladder as well as in the nonoperative cases. The laparotomy scar is palpated in addition to cystoscopy and palpation of the bladder. Four typical cases are described, in two the electrocoagulation was applied twenty-six and seventeen times. A recurrence in the abdominal scar strongly suggests a malignant nature.

Muscle Flap as Tampon After Resection of Kidney—Ciminata extols the advantages of covering that portion of the kidney with an oblong flap of muscle tissue after resection of part of the kidney. Healing was exceptionally rapid in dogs thus treated but the muscle flap was rapidly resorbed, its place being taken by connective tissue. Conditions here are unusually poor for regeneration of the muscle fibers.

Complications of Nephrectomy—In discussing the numerous complications liable Fronstein ascribes the hematuria after nephrectomy to physiologic causes compensating hyperemia of the remaining kidney.

Zentralblatt fur Gynakologie, Leipzig

48 1729 1792 (Aug 9) 1924

- Pregnancy Pylitis E. Klaffen—p 1730
- *Hexamethylenamin in Postoperative Ischuria E. Weinzierl—p 1741
- Idem A. Ecke—p 1746 Idem E. Schwab—p 1749
- *Agenesis of Kidney W. Duwe—p 1754

Hexamethylenamin in Postoperative Ischuria—Weinzierl used with good results intravenous injections of 40 per cent hexamethylenamin in postoperative retention of urine in 327 gynecologic and twenty-eight obstetric cases. He injected 5 c.c. the second day after the operation. The dose was repeated once or twice. Ecke administered the injection at 9 o'clock in the evening if the patient was operated in the forenoon. The results in fifty-one cases have been encouraging. Schwab admits the value of the treatment, but warns to interrupt it at once on signs of irritation of the bladder. In his experience it failed only in 29 per cent of 420 cases.

Congenital Defect of Left Kidney and Genital Malformation—Duwe describes a case of an absent left kidney associated with a rudimentary uterus and vestiges of the left ovary. The right organs were regularly functioning. The vagina was missing, external genitalia, urethra and bladder normal. The malformation, he says, may be explained by an incomplete development of the left urogenital fold and of Müller's duct.

Casopis lekaruv ceskych, Prague

62 1225 1252 (Aug 16) 1924

- *Bone Changes in Ozena J. Cisler—p 1225
- *Curability of Tuberculous Cavities J. Jedlicka—p 1229
- *Histology of Corti's Organ N. Solovcov—p 1234
- Flocculation Reactions J. Hachla—p 1238 Cont d
- Treatment of Cancer of Pharynx E. Soukup—p 1243

Bone Changes in Ozena—Cisler studied the changes of bones in seventy-six patients with ozena. He finds that they may be explained as sequelae of the atrophic process in the nose. There is no reason to assume that the changes are primary and predispose to the ozena. Their extent depends on the age in which ozena began, the changes being greater if the skull was still developing.

Curability of Tuberculous Cavities—Jedlicka considers conservative methods as rarely sufficient in pulmonary tuberculous cavities. Pneumothorax and extrapleural thoracoplasty have changed the lethal prognosis to a large extent. Twelve roentgenograms illustrate the improvement observed in some of his patients.

Histology of Corti's Organ—Solovcov gives technical hints for histologic examination of Corti's organ. The organ is separated from the spinal ganglion by another neuron. This accounts for the normal development of the organ in anencephalia.

Nederlandsch Maandschrift v Geneeskunde, Leiden

12 421-492, 1924

*Results of Operative Treatment of Goiter P. M. de Planque—p. 421
*Accessory Thyroid in Tongue M. N. Roegholt—p. 486

Results of Operations for Goiter at Leiden—De Planque's tabulation of the details of 46 cases (1912-1923) fills thirty pages. Only half the thyroid was removed, and only 7 of the 17 with exophthalmic goiter were cured and 19 of the 29 with goiter but no signs of hyperthyroidism. Two died in each of these groups. He has now adopted subtotal thyroidectomy for the routine procedure. In grave cases of exophthalmic goiter the operation is done at more than one sitting.

Lingual Goiter—Roegholt extirpated the tumor in the tongue, which he had assumed to be a lymphoma. It proved to be a colloidal thyroid adenoma from aberrant thyroid tissue in the base of the tongue, adherent to the hyoid bone. The young woman was physically and mentally backward, and had never menstruated until after the operation.

Nederlandsch Tijdschrift v Geneeskunde, Amsterdam

2 739-854 (Aug. 9) 1924

Cultivation of Blastocystis Hominis G. W. Bosch—p. 740
*Winter Infection with Malaria N. H. Swellengrebel—p. 750
*Tuberculous Spondylitis G. J. Huet—p. 764
*Hemolysins of Cholera Vibrios J. J. van Loghem—p. 773
Ileus from Meckel's Diverticulum K. A. Rombach—p. 776
*Progress in Scarlet Fever H. Aldershoff—p. 780
Lead in Drinking Water H. Peeters—p. 809

Fall and Winter Malaria Infection at Amsterdam—Malaria has been rather prevalent at Amsterdam in recent years, and Swellengrebel presents evidence that the parasite of tertian malaria can develop in *Anopheles maculipennis* living in Amsterdam houses in fall and winter, notwithstanding the freezing temperature outdoors. The number of mosquitoes found infected was large, even in comparison with tropical conditions, but the disease in man did not spread to correspond. In some parts of the city, thirty-six of these mosquitoes were found on an average in 140 houses between September and December, and thirty-nine in ninety-five houses January to April. It is evident that in malaria the external temperature is a negligible factor so far as indoor mosquitoes are concerned.

Treatment of Tuberculous Spondylitis—Huet seeks to explain the wide difference in the outcome in different cases. By heeding the roentgenograms—taken from the side—we may be able to determine which cases are promising. He agrees with Calve that the first two points of infiltration and the ulcerative destruction, take us sometimes five before there is any consolidation. Cicatrization is fibrous at first, and the union of bone unless the bones are in direct contact. Look for complete recovery is more for disease has lasted, and the more pains. In children, the operation is merely a treatment.

Hemolysins in Cholera Vibrios—Van Loghem discusses the digestion of the elements of the vibrio by which he means the passage of the vibrio through the erythrocytes. The cholera vibrio is not potent in this respect while the Tor vibrio forms hemolysins. They see while the Tor vibrio and Dunbar's vibrio do.

Progress in Scarlet Fever—Aldershoff discusses the improvements in our knowledge of scarlet fever from the National Serum Institute at Utrecht.

engaged in studying the strain of hemolytic streptococcus of scarlet fever sent to him from America. He accepts the Schultz-Charlton blanching phenomenon as a reliable sign of scarlet fever during the first four days, and he regards the outlook as promising for preventive inoculation with a scarlet fever toxin-antitoxin, as in diphtheria. [He does not mention Cronia's work.]

Hygiea, Stockholm

86 417-448 (July 15) 1924

Neurasthenic Fatigue P. Bjerre—p. 417 Conc. n. p. 462
Present Status of Epidemic Encephalitis F. Bergman—p. 426

86 449-480 (July 31) 1924

The Leukocyte Count in Arthritis G. Kahlmeter—p. 449
Delusions and the Conventional S. Hedenberg—p. 473

Leukocyte Count in Acute and Chronic Arthritis—Kahlmeter's research on 169 arthritis cases has confirmed for the leukocytes what he found in regard to the erythrocytes in 132 cases, namely that in secondary chronic polyarthritis in atebrie periods arthritis deformans, and primarily chronic polyarthritis without fever, the blood findings are within normal range while the erythrocytes were below 4,000,000 in 50 per cent of the febrile arthritis cases, gonorrheal arthritis and primarily chronic progressive arthritis with fever, and leukocytosis was pronounced. The evidence thus testifies to the different nature of primarily chronic arthritis in the cases with and without fever.

Norsk Magazin for Lægevidenskaben, Christiania

85 503-632 (July) 1924

Puerperal Thrombosis G. Schaanning—p. 503
Reactivation After Arsphenamin Injection R. Krefling—p. 535
Improved Trephine for Sclerectomy S. Holth—p. 538
*Gastric and Duodenal Ulcer H. Krohn—p. 540
A Year of Roentgenotherapy H. Nitter—p. 548

Puerperal Thrombosis—Thrombosis developed in 0.61 per cent of the 9,567 childbirths in the last six years at the Christiania maternity. It appeared the fifteenth or sixteenth day after delivery in all but two in which the intervals were three and fifty-one days. Embolism developed in thirteen cases, none fatal. The women who had lost more than 1,000 c.c. of blood presented thrombosis in 292 per cent and puerperal fever in 10 per cent, while the corresponding figures for women who had not lost so much blood were 0.44 and 4.1 per cent. It is now the routine practice to arrest excessive hemorrhage at all costs as the lesser evil not waiting until the patient is too weak. When the loss of blood reaches 1,000 c.c. Brandt clears out the uterus with his hand after delivery of the placenta. This always arrested the hemorrhage, and none died from infection afterward. As soon as thrombosis is suspected, the foot of the bed is raised with blocks 15 cm. high but no bolster is placed under the knees. Superficial is begun after the temperature has been normal for and the joints are exercised both passively and actively. Embolism never developed from this. Two of the patients died from pyemia about forty days after delivery, and one from pneumonia. Others recovered. There were only two among the 119 placenta praevia cases.

Injection with Negative Wassermann—reiterates that it is a mistake to make any change in the Wassermann reaction of arsphenamin.

Krohn remarks that the aim is to influence the outcome in the last ten years, but the course was so severe but the ulcer was probably supervised for more than 75 per cent of the cases in 48 per cent above the hemorrhage from the ulcer one died from three years later. The ulcer persisted after operation.

Curability of Tuberculous Cavities—Jedlicka considers conservative methods as rarely sufficient in pulmonary tuberculous cavities. Pneumothorax and extrapleural thoracoplasty have changed the lethal prognosis to a large extent. Twelve roentgenograms illustrate the improvement observed in some of his patients.

Histology of Corti's Organ—Solovcov gives technical hints for histologic examination of Corti's organ. The organ is separated from the spinal ganglion by another neuron. This accounts for the normal development of the organ in anencephalia.

Nederlandsch Maandschrift v Geneeskunde, Leiden

12 421 492 1924

- *Results of Operative Treatment of Goiter P. M. de Planque—p. 421
*Accessory Thyroid in Tongue M. N. Roegholt—p. 486

Results of Operations for Goiter at Leiden—De Planque's tabulation of the details of 46 cases (1912-1923) fills thirty pages. Only half the thyroid was removed, and only 7 of the 17 with exophthalmic goiter were cured and 19 of the 29 with goiter but no signs of hyperthyroidism. Two died in each of these groups. He has now adopted subtotal thyroidectomy for the routine procedure. In grave cases of exophthalmic goiter the operation is done at more than one sitting.

Lingual Goiter—Roegholt extirpated the tumor in the tongue, which he had assumed to be a lymphoma. It proved to be a colloidal thyroid adenoma from aberrant thyroid tissue in the base of the tongue, adherent to the hyoid bone. The young woman was physically and mentally backward, and had never menstruated until after the operation.

Nederlandsch Tijdschrift v Geneeskunde, Amsterdam

2 739 854 (Aug. 9) 1924

- Cultivation of Blastocystis Hominis G. W. Bosch—p. 740
*Winter Infection with Malaria N. H. Swellengrebel—p. 750
*Tuberculous Spondylitis G. J. Huet—p. 764
*Hemolysins of Cholera Vibrios J. J. van Loghem—p. 773
*Ileus from Meckel's Diverticulum K. A. Rombach—p. 776
*Progress in Scarlet Fever H. Aldershoff—p. 780
Lead in Drinking Water H. Peeters—p. 809

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Treatment of Tuberculous Spondylitis—Huet seeks to explain the wide difference in the outcome in different cases. By heeding the roentgenograms—taken from the side—we may be able to determine which cases are promising. He agrees with Calve that the first two phases, the infiltration and the ulcerative destruction, take usually three years and sometimes five before there is any attempt at healing. Cicatrization is fibrous at first, and there is never consolidation of bone unless the bones are in direct contact. The outlook for complete recovery is more favorable the longer the disease has lasted, and the more pains-taking the after-care. In children, the operation is merely one incident in the treatment.

Hemolysins in Cholera Vibrios—Van Loghem discriminates between digestion of the elements of the blood and hemolysis, by which he means the passage of the hemoglobin out of the erythrocytes. The cholera vibrio is not hemolytic at first, while the Tor vibrio is potent in this respect, but in time the cholera vibrio forms hemolysins. They seem to be endolysins while the Tor vibrio and Dunbar's vibrio form exohemolysins.

Progress in Scarlet Fever—Aldershoff surveys the recent achievements in our knowledge of scarlet fever. He is director of the National Serum Institute at Utrecht, and he is now

engaged in studying the strain of hemolytic streptococcus of scarlet fever sent to him from America. He accepts the Schultz-Charlton blanching phenomenon as a reliable sign of scarlet fever during the first four days, and he regards the outlook as promising for preventive inoculation with a scarlet fever toxin-antitoxin, as in diphtheria. [He does not mention Cronin's work.]

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Norsk Magazin for Lægevidenskaben, Christiania

85 505 632 (July) 1924

- *Puerperal Thrombosis G. Schaanning—p. 505
*Reactivation After Arspenamin Injection R. Krefling—p. 535
*Improved Trephine for Sclerectomy S. Holth—p. 538
*Gastric and Duodenal Ulcer H. Krohn—p. 540
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Provocative Arsenical Injection with Negative Wassermann Reaction—Krefling reiterates that it is a mistake to accept as reliable reactivation any change in the Wassermann reaction after provocative injection of arsenphenamin.

Gastric and Duodenal Ulcer—Krohn remarks that the duration of the ulcer did not seem to influence the outcome in his 266 ulcer patients treated medically in the last ten years. Three developed cancer in the ulcer but the course was so short in two in this group that the ulcer was probably malignant from the start. In the 172 supervised for more than two years, the outcome was excellent in 75 per cent of the patients aged less than 40, but only in 48 per cent above that age. In the total fifteen cases of fatal hemorrhage from the ulcer all but three were over 40. Only one died from perforation of the ulcer, this occurred three years later, nearly five years after the first symptoms. The ulcer perforated later in two cases, with recovery after operative measures.

